VOLUME XLIX NUMBER TWO

THE NATIONAL GEOGRAPHIC MAGAZINE

FEBRUARY, 1926

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ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by an addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resulting given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole.

NOT long ago The Society granted $25,000, and in addition $75,000 was given by individual members to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people.

THE Society is conducting extensive explorations and excavations in northwestern New Mexico, which was one of the most densely populated areas in North America before Columbus came, a region where prehistoric peoples lived in vast communal dwellings and whose customs, ceremonies, and name have been engulfed in an oblivion.

THE Society also is maintaining expeditions in the unknown area adjacent to the San Juan River in southeastern Utah, and in Yunnan, Kweichow, and Kansu, China—all regions virgin to scientific study.

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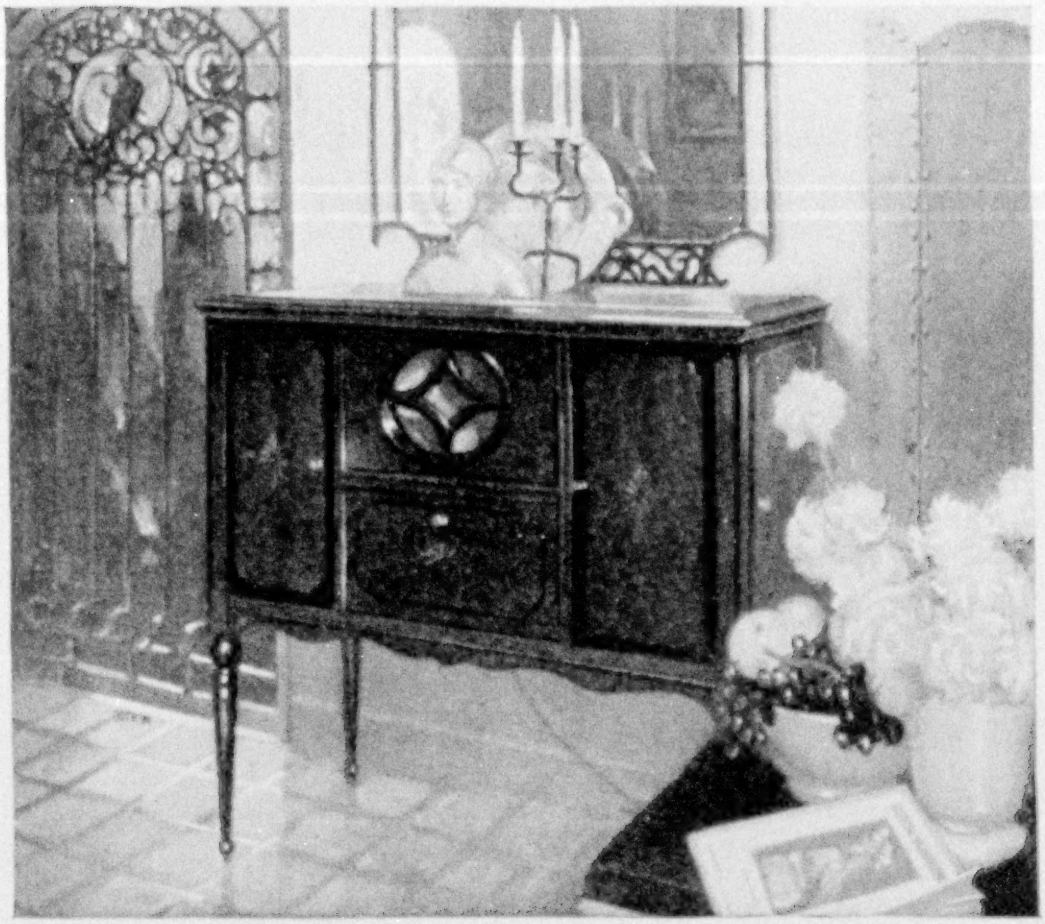

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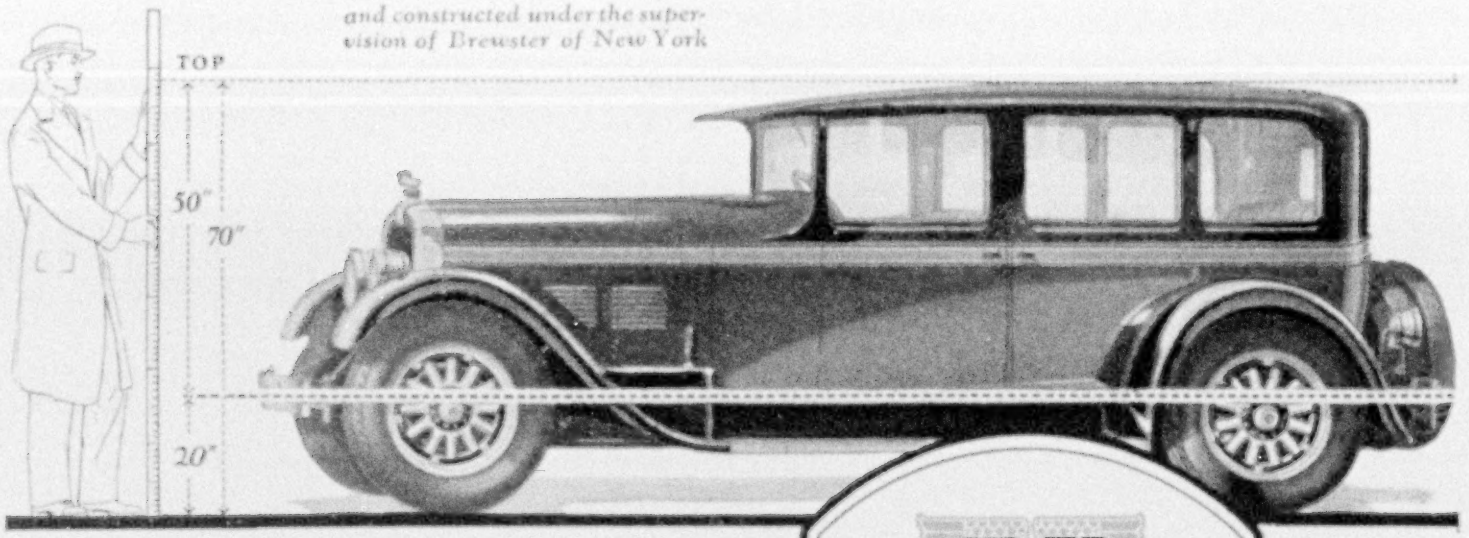

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STUTZ

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Radically lowered center of gravity
—giving greater safety, comfort and roadability

Quiet, long-lived, worm-drive rear axle
—permitting lowered body; it improves with use

90 H.P. motor; with overhead camshaft
—novel design; smooth, flexible, vibrationless

New, non-leaking hydrostatic brakes
—inherently equalized; quick-acting and positive

ROADABILITY—The New Stutz has a remarkable quality of "road-adhesiveness." The result can be likened to a strong magnetic attraction exerted by the earth upon the car's wheels.

SMOOTH AND QUIET IN OPERATION—

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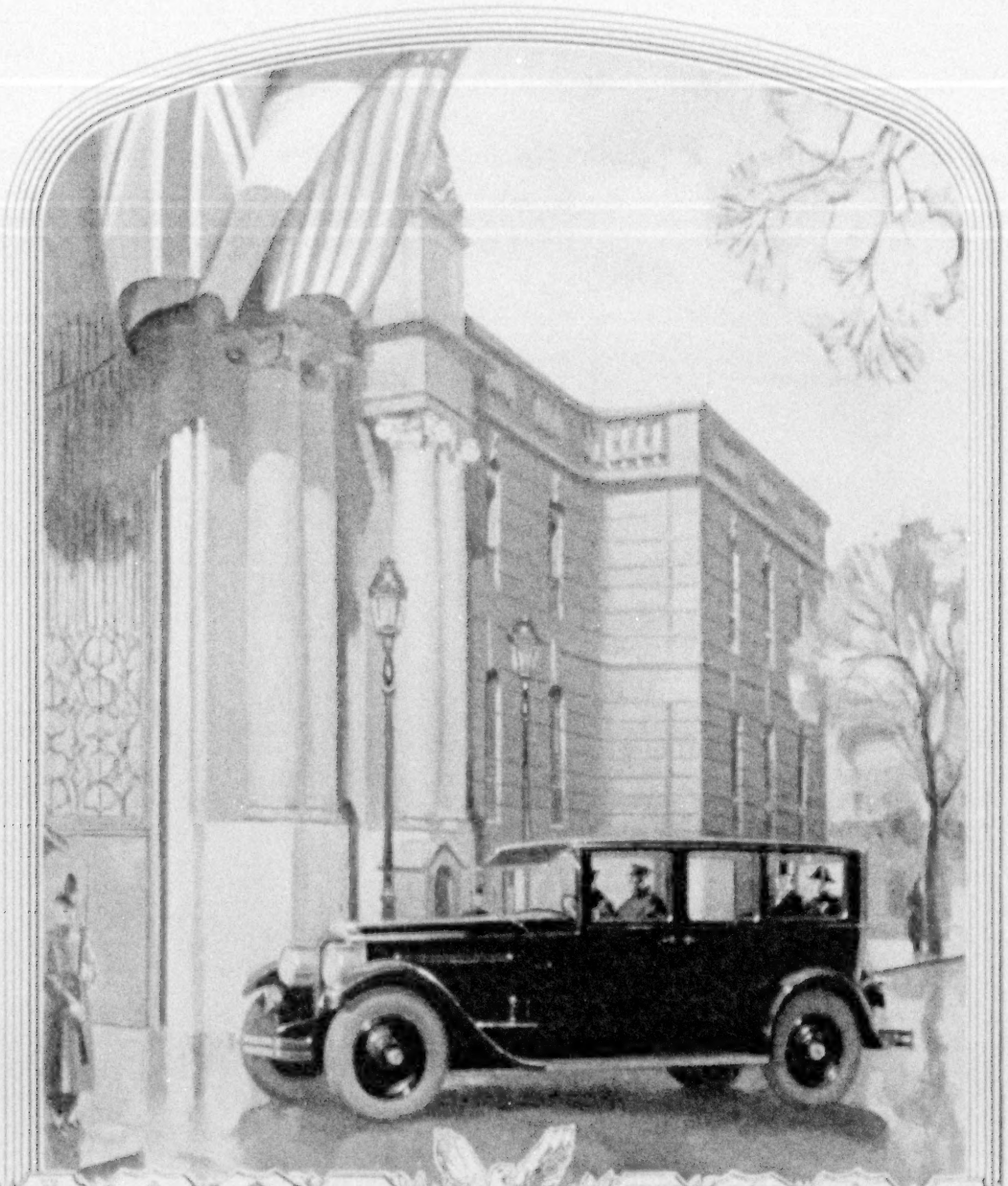

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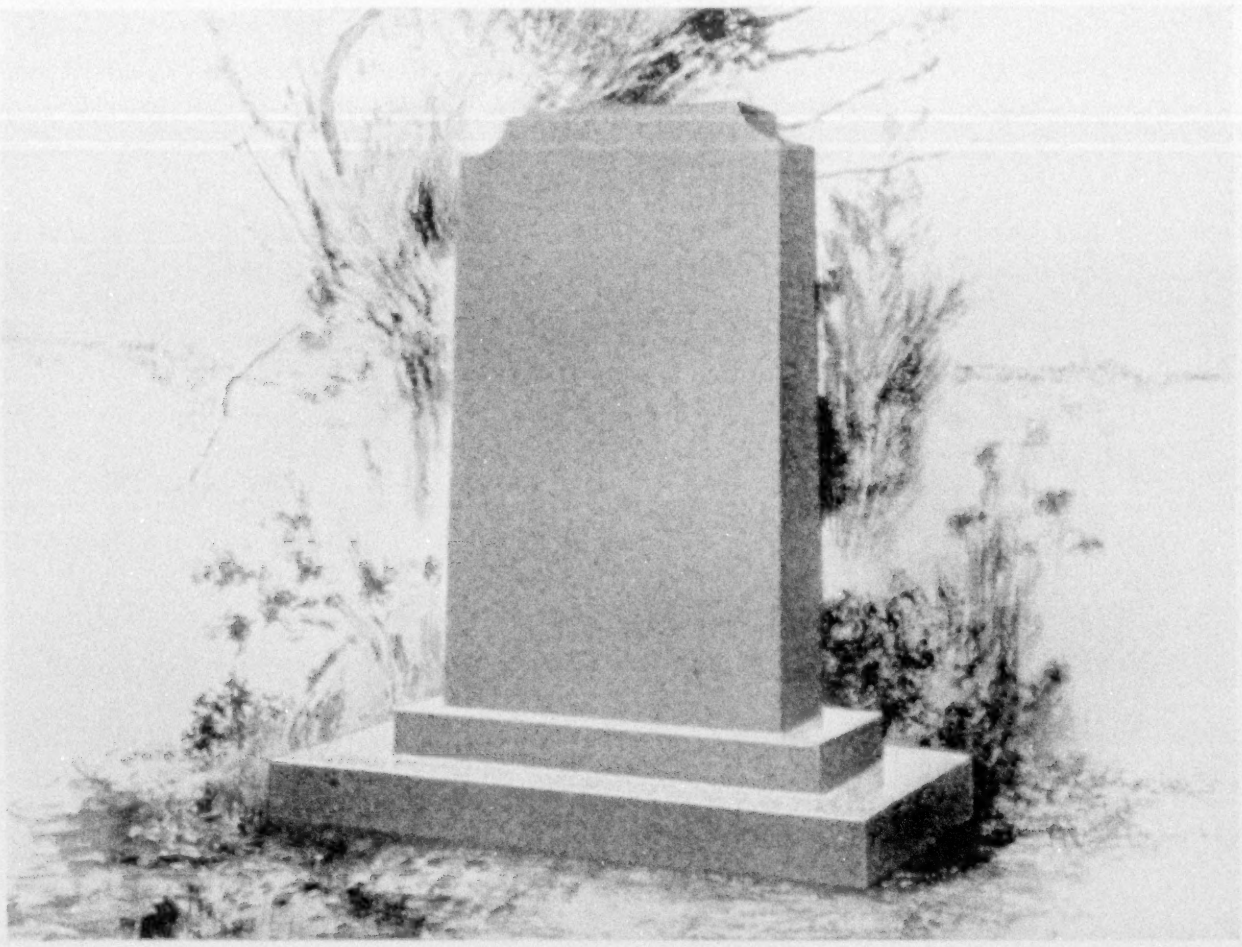

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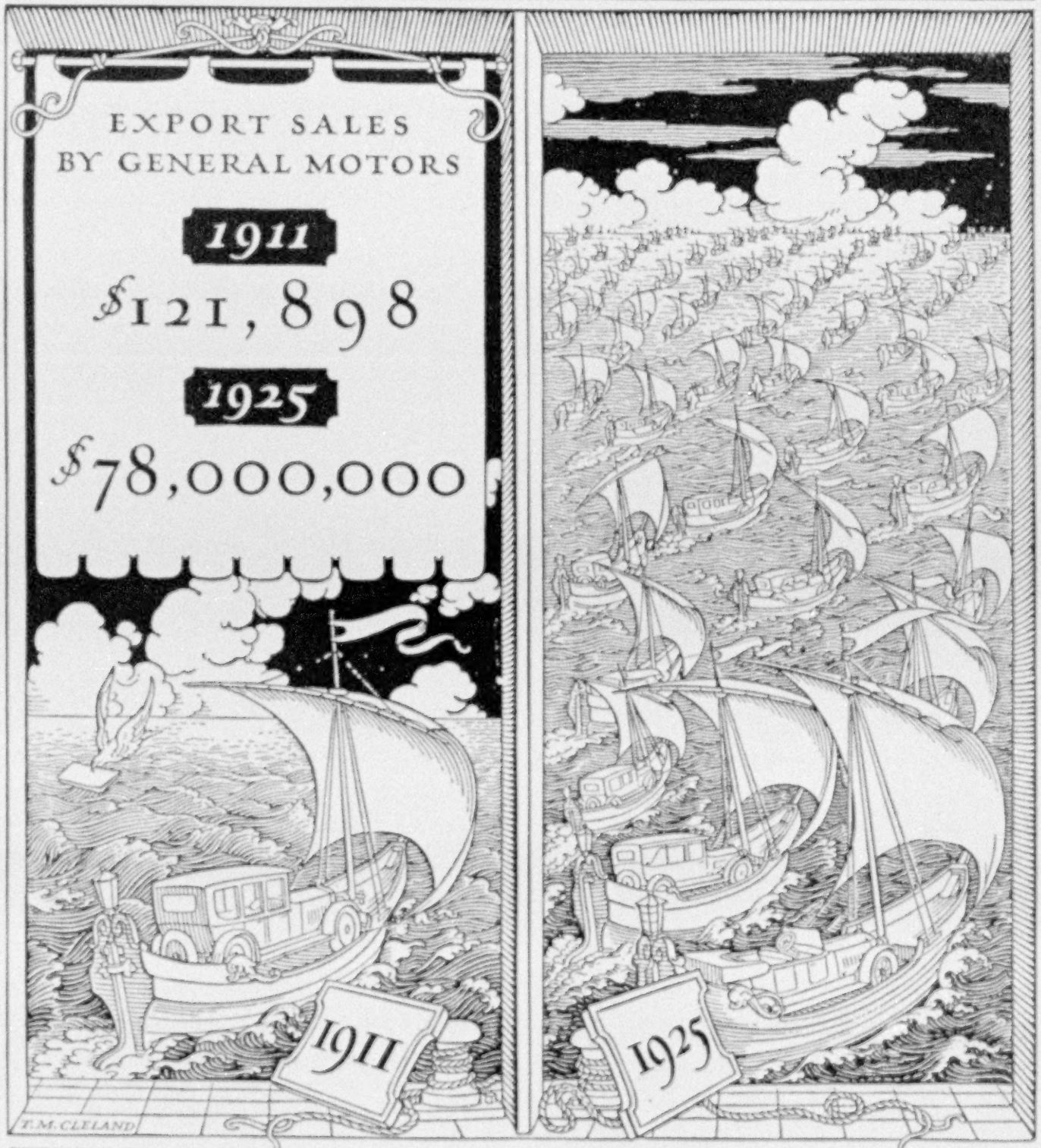

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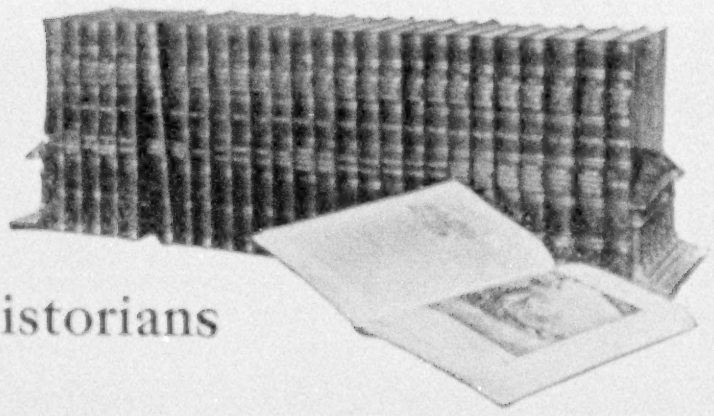

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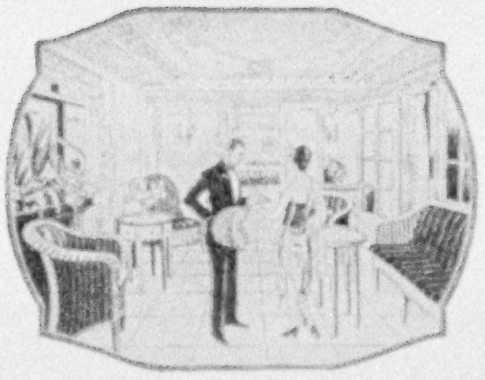

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Do You Make these Mistakes in ENGLISH?

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Many persons say, "Did you hear from him today?" They should say, "Have you heard from him today?" Some persons spell calendar "calender" or "calander." Still others say "between you and I" instead of "between you and me." It is astonishing how many persons use "who" for "whom," and mispronounce the simplest words. Few know whether to spell certain words with one or two "c's" or "m's" or "r's," or with "ie" or "ei." Most persons use only the most common words—colorless, flat, ordinary. Their speech and their letters are lifeless, monotonous, humdrum. Every time they talk or write they show themselves lacking in the essential points of English.

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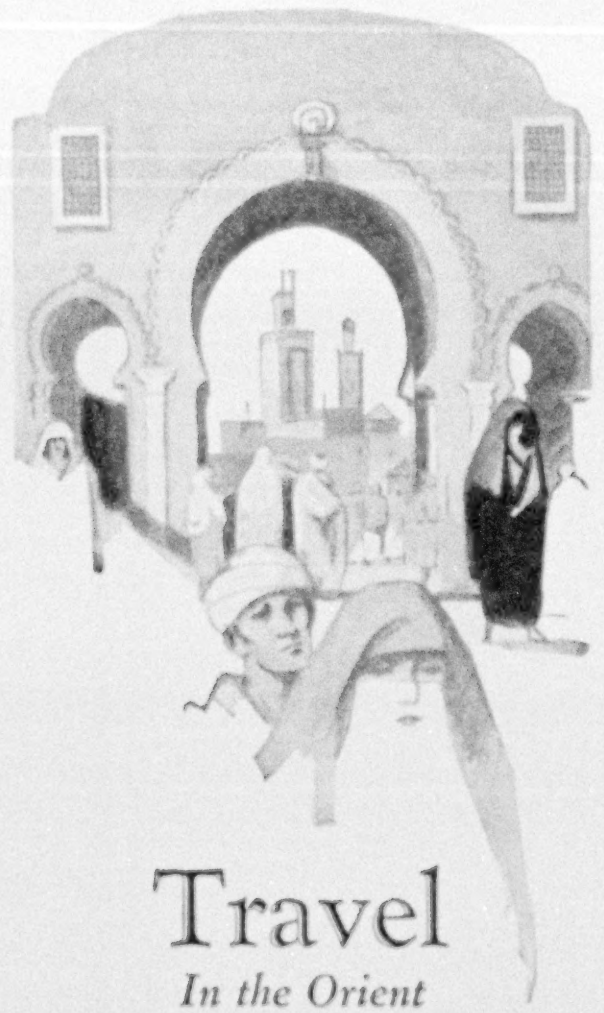

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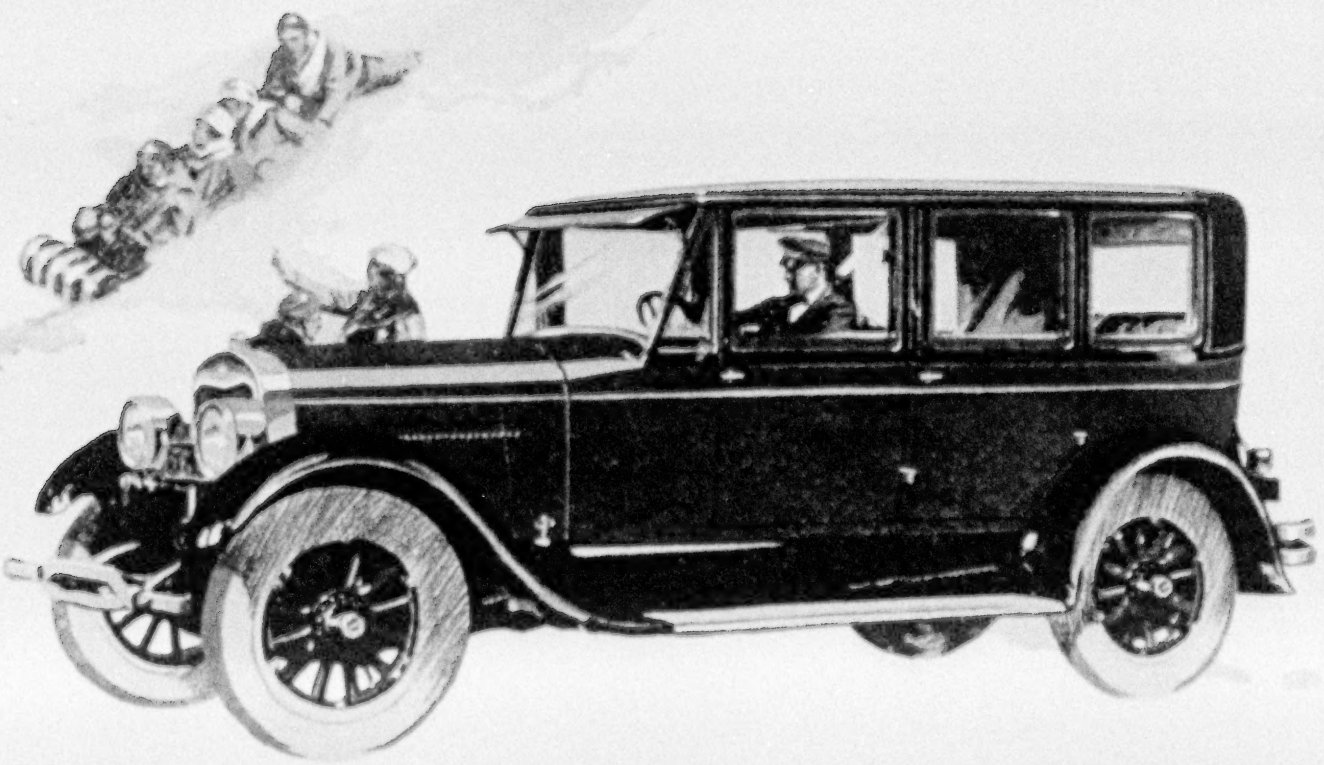

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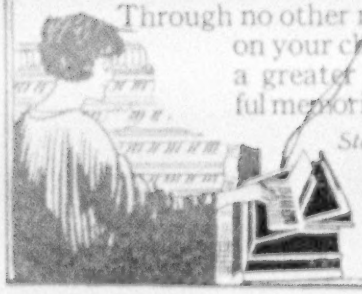

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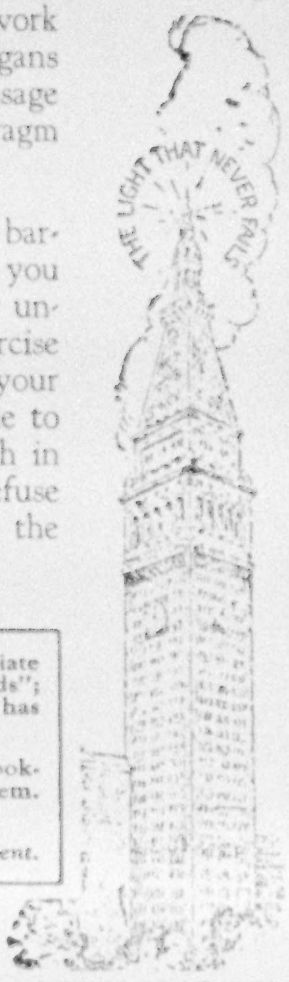
That is Nature's great bargain—offered in return for only 15 minutes a day used in simple, enjoyable exercise. Add plenty of walks in the open and win huge dividends in health and happiness.

Nature is an honest bargainer. Give her but 10 minutes a day and she will give you an equivalent benefit. Give only five minutes—she will play fair and give *some* of her bounty—enough to make you want more.

Exercise is necessary—not merely to give you better looks and a better posture, but also to make your internal organs better able to do their work. Your heart is a muscle. The walls of your blood vessels, stomach and intestines are largely muscle. If, through lack of exercise, you grow flabby and lose muscular tone, your bloodstream will flow more slowly and your body, in consequence, will be poorly nourished. If the diaphragm, which is muscle, is not exercised, the lungs can do only a part of their work and the sluggish abdominal organs will lack the stimulating massage which a hard-working diaphragm gives.

Dame Nature has spread her bargain counter for you—unless you happen to be one of the few unfortunates for whom exercise might prove harmful. If your doctor says that you are able to exercise, are you rich enough in good looks and health to refuse the greatest bargain in the world?



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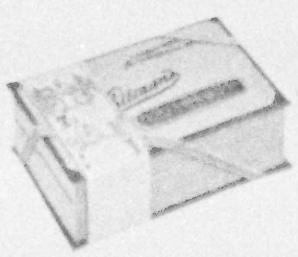
In one size only, holding three and a half pounds. Five dollars. Decorated and garnished, if you like, with a gay Valentine band.

An uncommon expression of unusual regard. A fitting gift from a prince to a princess.



A Fussy Package for Fastidious Folks, that green and gold package of nut and nut-combinations in chocolate also can be had with a Valentine band in one pound and two pound sizes.

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VOL. XLIX, No. 2 WASHINGTON FEBRUARY, 1926

THE NATIONAL GEOGRAPHIC MAGAZINE

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ROUND ABOUT BOGOTÁ

A Hunt for New Fruits and Plants Among the Mountain Forests of Colombia's Unique Capital

BY WILSON POPENOE

AGRICULTURAL EXPLORER, UNITED STATES DEPARTMENT OF AGRICULTURE

THERE was a timid knock. Arising from my first night's sleep in the chilly air of Bogotá, I opened the door and was confronted by a youth neatly dressed in a dark-gray suit of cotton drill, *alpargatas*, or rope sandals, and a clean white collar. He was obviously poor, but immaculate.

"Pardon the molestation," he said, as he looked up hopefully, "but I saw an announcement of your arrival in the morning paper, and I thought perhaps you might need an assistant during your stay in this region."

His eagerness, as evidenced by the early hour of his call, and his neat and business-like appearance won me completely. Hernando Zamora was installed as assistant agricultural explorer, and half an hour later we set off together for my first glimpse of the capital of Colombia.

For months I had been looking forward to reaching the Andes. Mexico and Central America had become familiar through travels, on foot and on horseback, which had taken me into out-of-the-way corners as well as the principal cities. I had wondered how it would be in South America. Would I find the same sort of people, the same food-plants, or even the same landscapes?

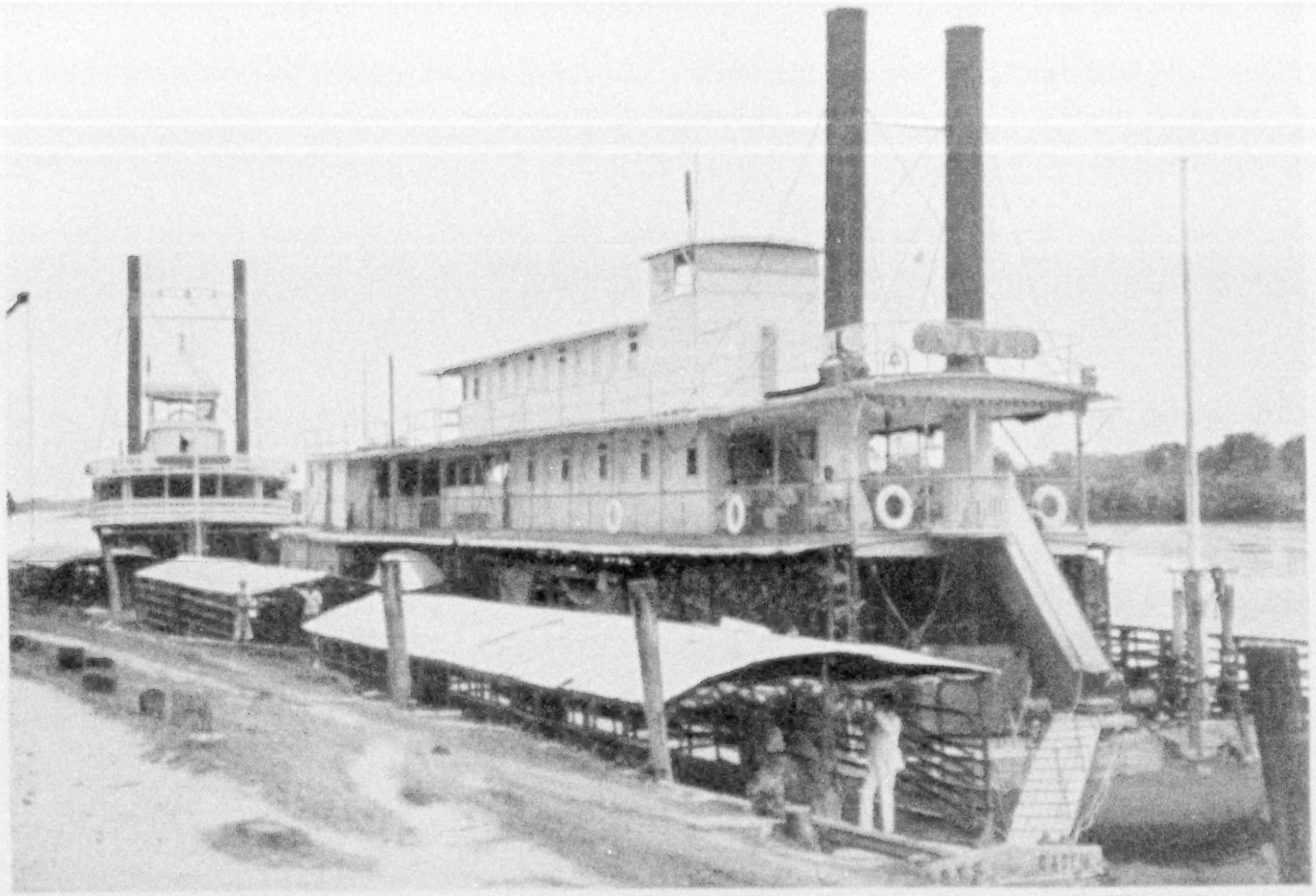
My mind was alert for new impressions on this first ramble about the place. I made frequent comparisons with the other Latin American cities of my acquaintance—with Havana, with Mexico, and with the capitals of Central America.

BOGOTÁ IS TWELVE DAYS' JOURNEY FROM THE SEA

The general character of the buildings, the presence of an open square or *plaza* in the center of the city, without which no Latin American settlement is complete; these and other features were strongly reminiscent of the regions I had traversed north of the Isthmus. But there was a feeling of isolation about the place which was new to me.

Perhaps it lay partly in my own imagination, perhaps partly in the memory of the 12 days' journey up the Magdalena River from the Caribbean coast.

Discounting as best I could these factors, I still felt, as I gazed past substantial houses of brick and plaster to the distant crests of the Suma Paz Mountains, as I breathed deeply of the cold, rare atmosphere of these Andean heights, and as I wandered through side streets, strangely silent save for the pattering of bare feet upon the naked cobblestones—I still felt, and with a conviction that increased rather than diminished as the days passed by, that I had left behind me, far down beyond the Magdalena, those things with



Photograph by Wilson Popenoe

THE WATER FRONT AT LA DORADA

The steamers which ply the waters of the lower Magdalena are of the type which was extensively used, during the latter half of the past century, on the Mississippi. Frequently they travel with barges alongside, so as to increase their freight capacity. The journey from Barranquilla, on the Caribbean coast, to Girardot, whence there is a railroad to Bogotá, is made in two stages: boats on the lower Magdalena go as far upstream as La Dorada, where passengers and freight are transferred to a train which carries them around the rapids of Honda. At Beltrán commences another and shorter journey, on the upper Magdalena, which ends at Girardot.

which I was familiar and had launched upon a journey through a new world.

The almost total absence of Indians, so characteristic of Mexico and Guatemala, where I had recently spent many months, struck me forcibly. The people appeared to be of two classes: well-dressed men and women of pure Spanish stock, and the somewhat ragged peon element — the laboring class—whose faces gave evidence that the Indian race, though vanished in its purity, still lingered in the blood of these sturdy folk of the plateau.

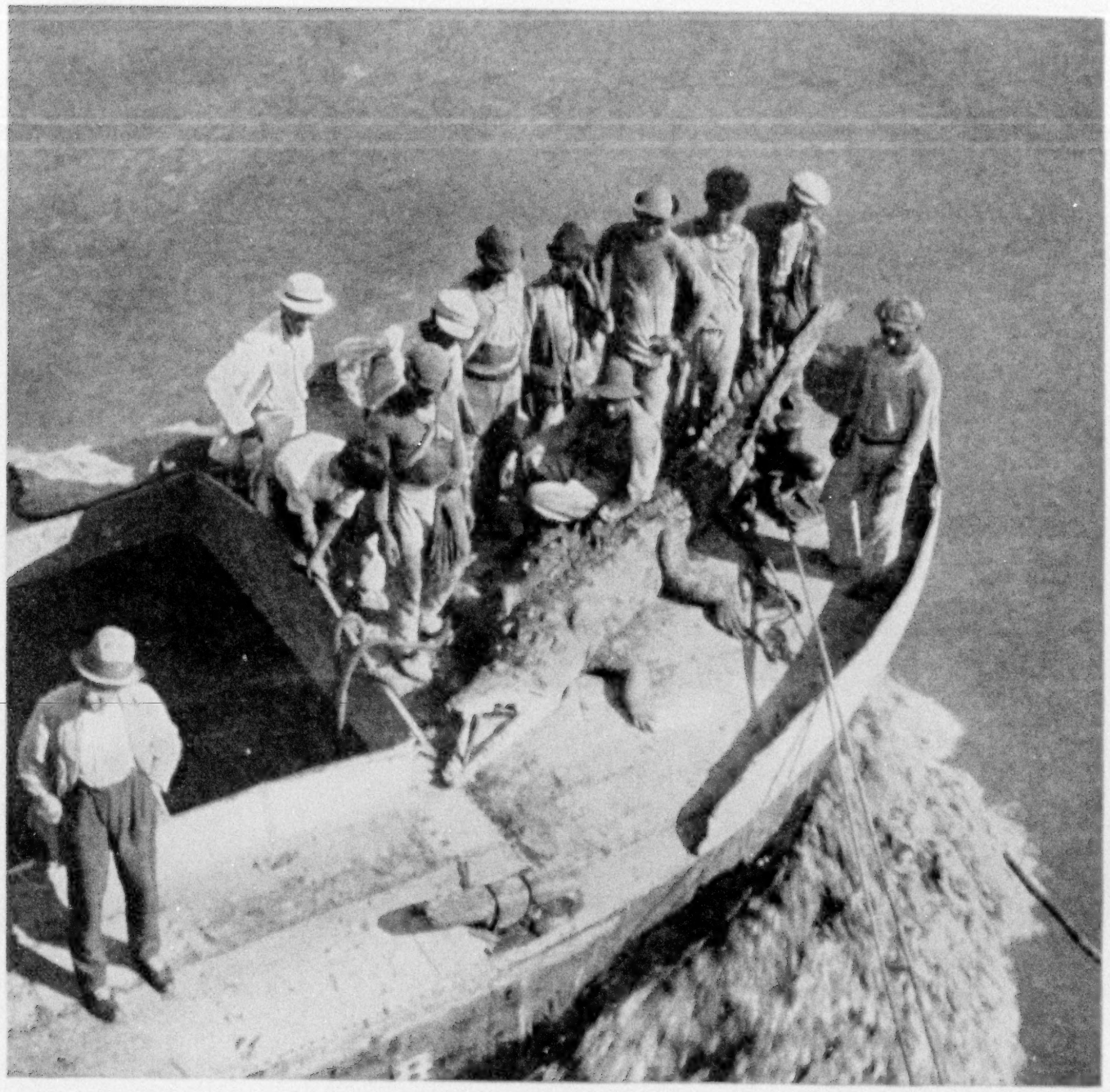
I liked the place, and frankly said so to Hernando. This pleased him, for there is nothing which the Latin soul craves more deeply than friendship and respect.

BOGOTÁ SPANISH IS UNEXCELLED IN AMERICA

During the days which followed I came into more intimate contact with the life of Bogotá. Of its many distinguishing features, none is more attractive than the elegance of its Spanish. My own vernacular, picked up mainly from the Indians and mule-drivers of back-country Guatemala, was so glaringly out of place that I scarcely dared to speak.

I have heard it said that the Spanish of present-day Bogotá is unusually pure because it has been free from the contaminating influence of other tongues. Chibcha, the language of the aboriginal inhabitants of the plateau, scarcely survived the Conquest. It is true, therefore, that there has been less opportunity to incorporate native terms, or to acquire a native accent, than has been the case in Mexico, with its huge element of Nahuatl-speaking aborigines, or in Peru, where the language of the Incas is still spoken by several hundred thousand people.

Freedom from contamination may ac-



Photograph by Russell Hastings Millward

A TROPHY FROM THE MAGDALENA

Alligators are numerous in the waters of the Magdalena River, Colombia's great highway, which flows for 1,000 miles through the heart of the country.

count for the purity of Bogotá Spanish, but it cannot account for its elegance. Only a people of real intelligence and of leisure to cultivate the finer things of life could have made universal, as it is to-day in Bogotá, the use of language which for grammatical purity and rhetorical finish is unexcelled in America.

Added to this polish is a quixotic love of flowery speech, which is to the outsider one of the most delightful traits of the Bogotano. Where else might one expect an experience like the following:

I was strolling one morning through a quiet part of the city when I was approached by a lad of ten or twelve years, who had obviously lost his way. He was just such a youth as would have stopped me in the United States with, "Say, Mister, how do I get to 224 Center Street?" But did the young Bogotano couch his inquiry in any such commonplace words? He did not. Removing his cap and making a sweeping bow, he inquired with that dignity which is possessed by every Latin, no matter what his estate:

"Podría su personalidad indicarme dónde está la calle Venezuela?" (Could Your Worthiness indicate to me the whereabouts of Venezuela Street?)

Unfortunately, I was as ignorant of the surroundings as himself; probably more so. I regretted my lamentable inability

Photograph by Wilson Popenoe

THE PORT OF GIRARDOT, ON THE MAGDALENA RIVER

This is one of numerous points of transshipment on the route between the Caribbean and Bogotá. It is here that the long voyage up the Magdalena, broken at one point in order to pass the rapids of Honda, is terminated, the remainder of the journey from here to Bogotá being by rail.

to furnish the required information, in the best Spanish at my command.

"Pues, agradezco la fineza de su merced, y perdóname," he said in parting. (I thank Your Grace for the courtesy, nevertheless; and please pardon me!)

FASHION STALKS THE STREETS OF COLOMBIA'S CAPITAL

I have seen no place in all the world where more attention is given to dress than in this remote Andean city. Even the humblest citizen possesses a cutaway coat and silk hat, reserved to be worn only upon great occasions. Those who can afford it don this garb regularly in the afternoon, changing with almost equal regularity to evening dress at sundown. The use of the walking stick is universal.

Thus it is that the streets of Bogotá present the appearance of a European capital, with even more stress on formal attire than is at present customary in Europe. The tailors of Bogotá, and their name is legion, receive fashion plates from London and Paris by every mail and strive to outdo each other in dressing their patrons according to the latest styles.

This attention to dress extends even to shoes, and bootblacks swarm around the citizen with dirty footwear like flies around a molasses jug. Thinking to avoid this nuisance, I always made certain that my shoes were clean before sallying forth from my hotel. But it was of no avail. The bootblacks insisted on doing the work over again, and on many occasions fifteen minutes after one youngster had finished with me I have been approached by another who insisted on repeating the performance.

When one's shoes positively refuse to tolerate further application of polish, the energetic bootblack gets down on his knees, flicks imaginary dust from one's toes, and attempts to collect half the price of a full shine.

Needless to say, the result of all this attention to dress is highly pleasing to the visitor, who may find, however, that the clothes he has brought from home—clothes which he has considered suitable for all occasions—fail to meet the rigid requirements of this South American capital, where formality is the rule, and few liberties are taken.

Daily, at 8 o'clock, Hernando called for me at my hotel, and we started out together for the market place. At this early hour the streets were empty, save for laborers going to their work; *cargadores* bringing in loads of fruits and vegetables from the surrounding country; and dignified señoras, closely veiled in black, hastening home from early mass. In the Plaza of San Francisco a few energetic students, out earlier than their fellows, were walking up and down, reading their lessons in a low monotone.

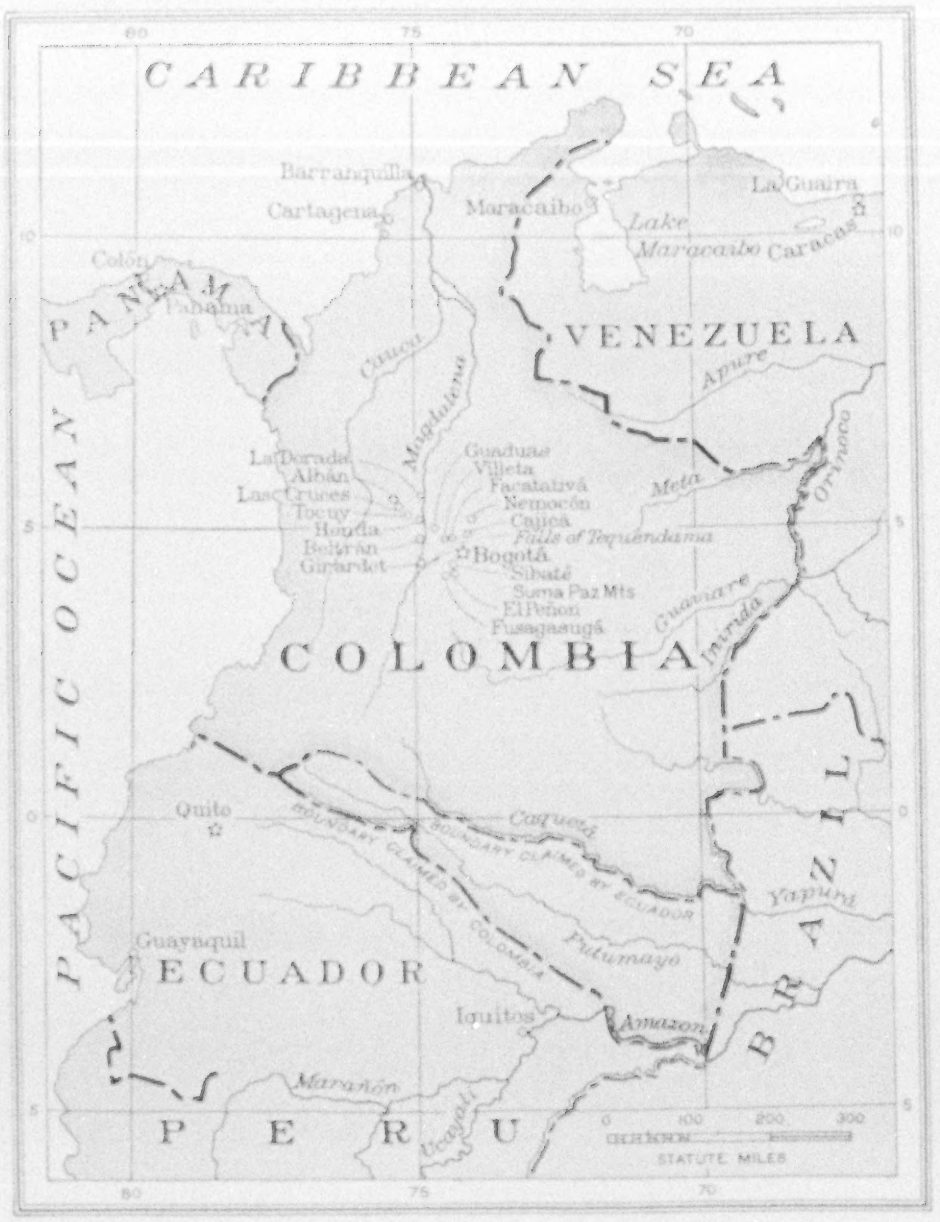
I think it was the market place which made me realize more clearly than anything else that I was no longer in Central America. All the way from northern Mexico to Panama I had seen and eaten the same fruits and vegetables. I had seen beans, corn, and squashes remain supreme among the staple foodstuffs, with only the addition of a few fruits—the banana, the orange, and others—to break the monotony of what has always impressed me as one of the least attractive diets in the world.

STRANGE ANDEAN VEGETABLES ARE ENCOUNTERED

Here in Bogotá I soon realized that I had left behind the beans-corn-and-squash complex and had entered into a new region, the Andean zone, in which the potato replaces Indian corn to a large extent, while other root crops—cubios, hibias, arracachas, and chuguas—play important rôles (see pages 144, 145, 147).

I was interested in testing these products, so I arranged with the cook at my hotel to prepare them for me. With the exception of the potato, they are not often seen on the tables of the well-to-do; they are staples among the lower classes, but are relegated to the background by those who can afford to do so.

I think the arracacha is the one most likely to please the palate of a northerner. It suggests the parsnip in character, but is, to my mind, of better flavor and texture than that somewhat unappreciated vegetable. In the homes of the humbler folk—and sometimes, also, on the best tables in Bogotá, for this vegetable enjoys wide popularity—small chunks of arracacha root are often found in the savory *sancocho*, a sort of South American Irish stew.



Drawn by A. H. Bumstead

A SKETCH MAP OF THE REPUBLIC OF COLOMBIA

I still remember those sancochos! When properly made, what really delectable dishes they can be! The mention of the word calls up memories of the Hotel Victoria and of *mi señora Mercedes*, who did the catering; generous, substantial soul was she, who, judging our capacity by her own, never failed to set before us meals which would satisfy the most ravenous appetite.

It was the cold season; Congress was in session, and three Deputies and a Senator honored the Victoria with their patronage. Nightly we gathered about the long table in the huge, chill, dimly lighted dining room, each of us wearing a heavy overcoat.

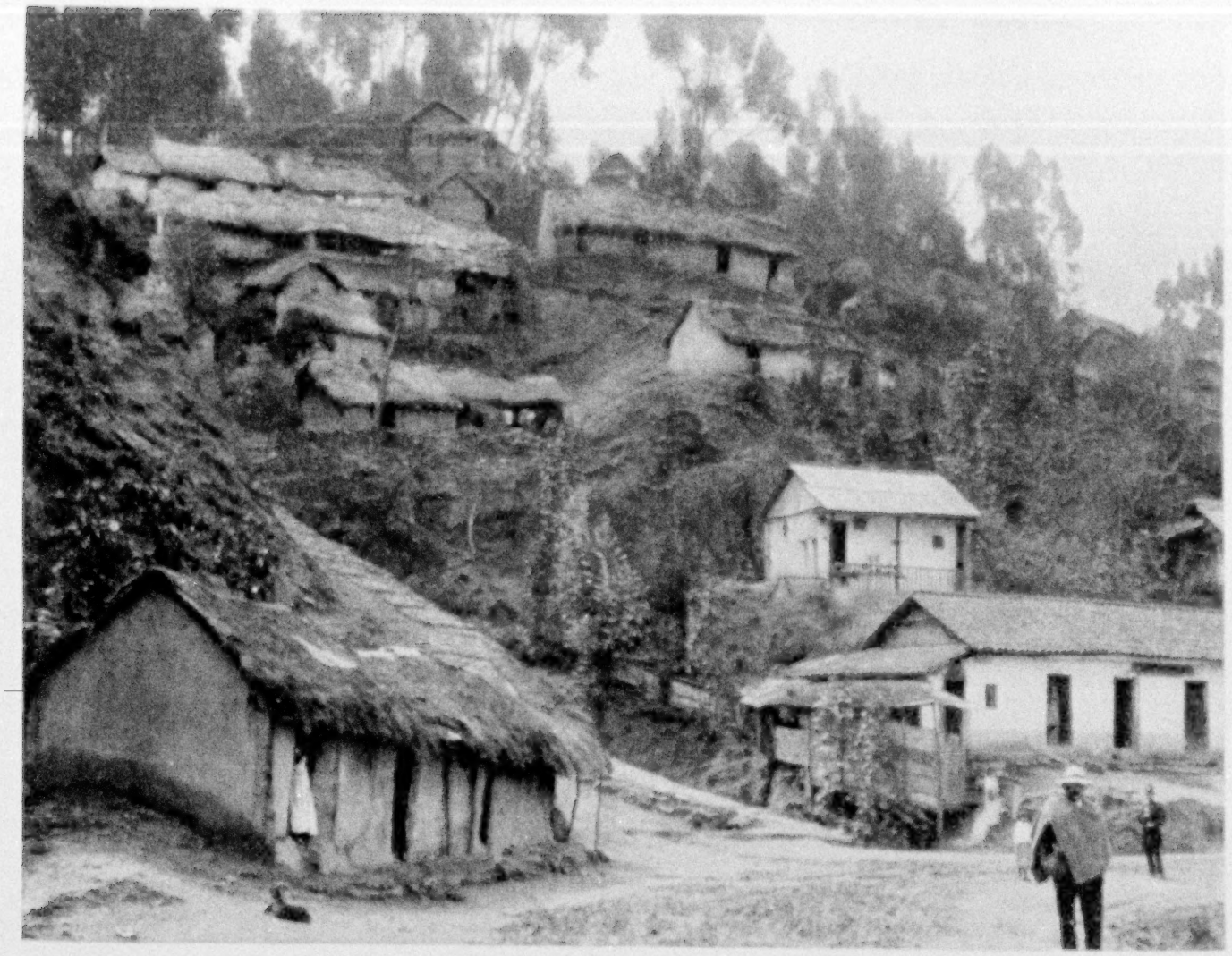
With what pleasure we hailed the arrival of those steaming bowls of sancocho, destined to serve more effectively than any overcoat in keeping down the shivers which were commencing to creep up our spines! What chunks of juicy beef, what thick slices of turnips and carrots, what succulent bits of arracacha, and of the golden, mealy, chestnut-flavored Andean potato were hidden in the bottom of that savory stew!

The hibia (*Oxalis tuberosa*) is a slender, pinkish-white tuber, which yields, when stewed with sugar, a product strikingly like green apple sauce. The cubio (*Tropæolum tuberosum*), a white tuber about the size and shape of a small sweet potato, and the chugua (*Ullucus* sp.) are of a mucilaginous consistency and insipid flavor not likely to please the novice.

ONE OF THE MOST COMPLETE MARKETS OF TROPICAL AMERICA

But to return to the market; it impressed me as one of the most complete I have seen in all tropical America. It occupies an entire city square of large size and is divided into a number of sections, each devoted to some particular product or group of products. Hernando knew just where to go for everything, and in response to my request would lead me to the best shops, those, perhaps, where he was known, and where, if I made a particularly large purchase, he felt at liberty to walk off with some small article by way of "commission."

Here was a long row of stalls, all handling nothing but root crops and grains; there another row, where fruits only were sold, and close beside it the vegetable section. Elsewhere were baskets and native articles of bamboo, as well as ropes, fiber sandals, pack saddles, and the like; and finally, along the northern edge of the inclosure, a row of tiny shops, boasting



Photograph by Wilson Popenoe

IN THE OUTSKIRTS OF THE CAPITAL

Mountains rise almost abruptly at the eastern edge of the city of Bogotá. Along the lower slopes are the modest homes of the laboring classes, often scattered among groves of eucalyptus trees.

more dignity than the others, wherein the countryman could purchase a new *ruana* before returning home.

THE RUANA IS A GARMENT OF GRACE AND SERVICE

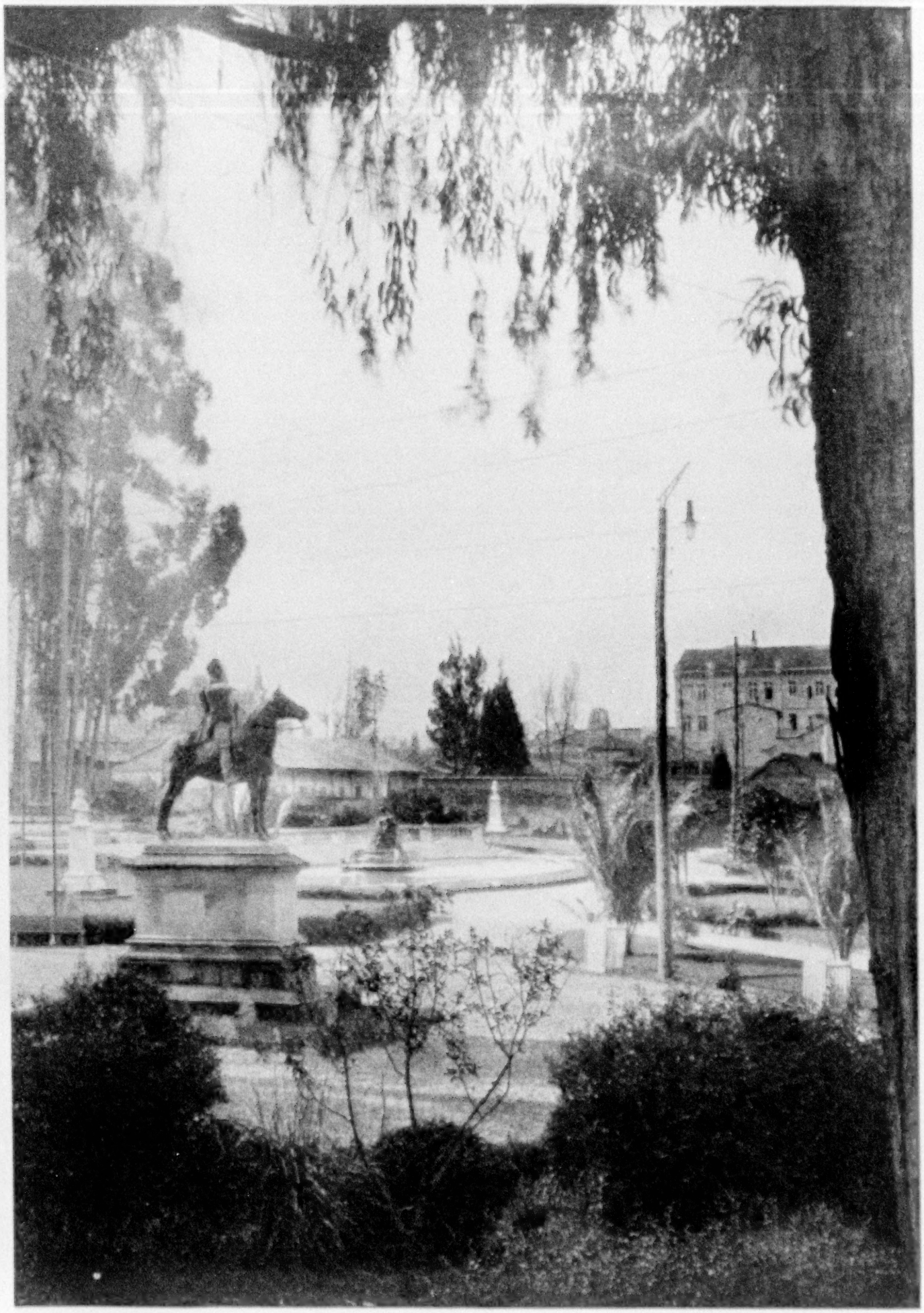
The ruana is the Colombian equivalent of the poncho, so widely used elsewhere in Latin America. It is somewhat less ample than the latter, measuring usually four to five feet in diameter; it is square and made of two strips of native woolen cloth sewed together, leaving a slit in the center through which the head of the wearer can be thrust.

My description may not give the impression of an elaborate, nor yet an elegant, garment; but I have never seen anything more expressive of unaffected grace than the manner in which a country gentleman of the Colombian Andes dons his ruana when mounting for his morning ride about the hacienda. With one hand he gathers up the folds and opens the slit in the center; then with a majestic toss he throws it over his head, allowing the folds to fall upon his back and shoulders. If the weather is fair, he turns up the two corners in front and drops them one over each shoulder.

For the cold winds and drizzling rains of the high Andes, there is no better garment than the ruana, unless it be the woolen poncho of Ecuador, thicker and larger, to meet the more rigorous climate to which its wearer is exposed. It is warm, it keeps out the rain, and at night it serves as a grateful addition to the slender allotment of blankets supplied by most Andean inns.

TRAVEL BY TRAIN IN COLOMBIA

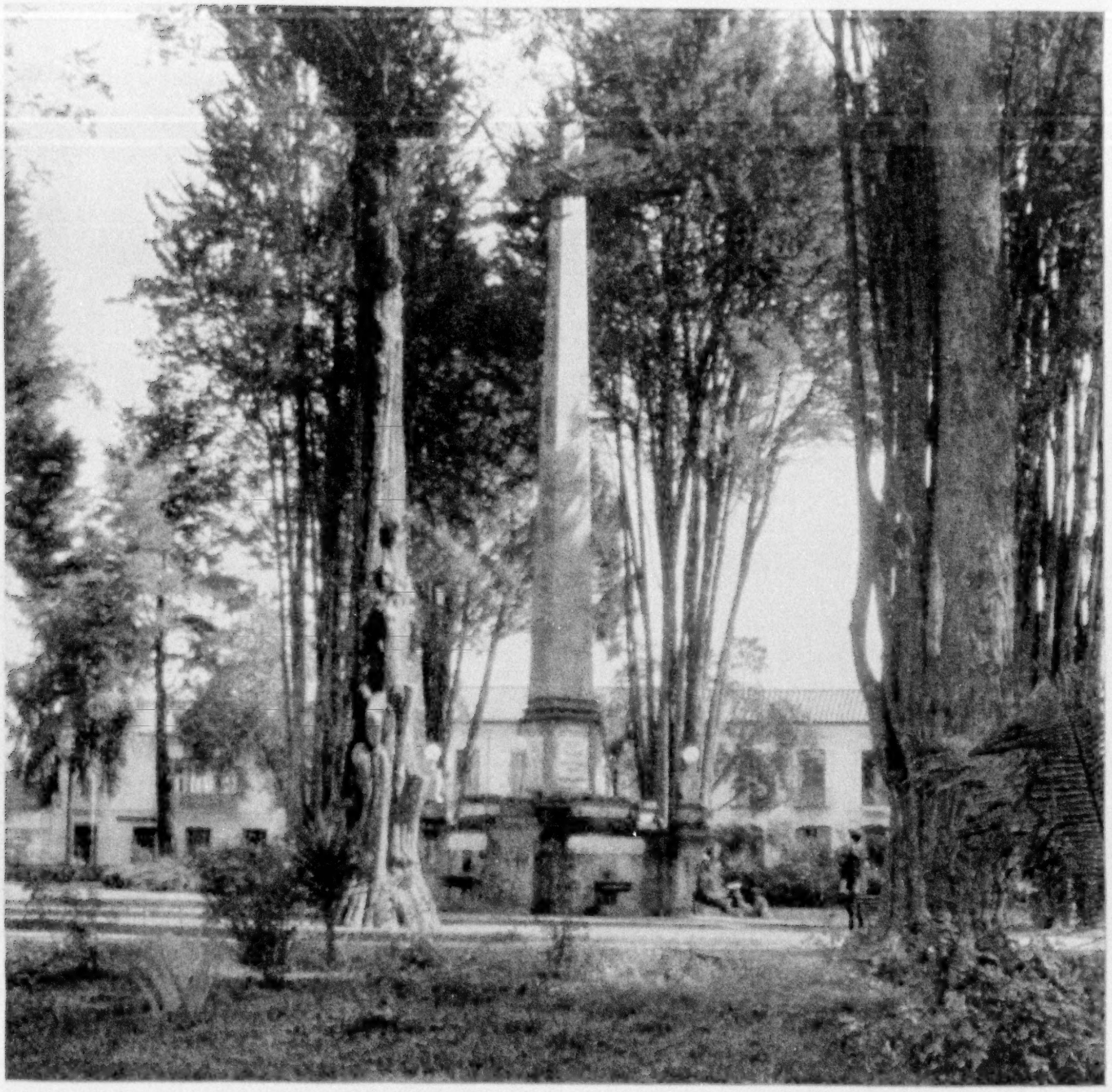
"Hernando," I said one morning, addressing my companion of a week's stay in Bogotá, during which we had watched the market place daily for interesting



Photograph by Wilson Popenoe

THE EQUESTRIAN FIGURE OF SIMÓN BOLÍVAR IN THE PARQUE DE INDEPENDENCIA, BOGOTÁ

After directing the struggle of his own country, Venezuela, Bolivar assisted the patriots of Colombia, Ecuador, and Peru to throw off the Spanish yoke. His name is revered in northern South America as that of no other historic figure.



Photograph by Wilson Popenoe

A FAVORITE GATHERING PLACE OF COLOMBIAN STUDENTS

In the chilly air of Bogotá, houses often become so uncomfortable that the residents take their meals wearing heavy overcoats, for it is not the custom in Latin America to heat buildings artificially, as is done in the more rigorous northern countries. In small parks such as this, the youth of Bogotá assemble on sunny mornings to prepare their lessons, often walking up and down as they read, to keep from shivering.

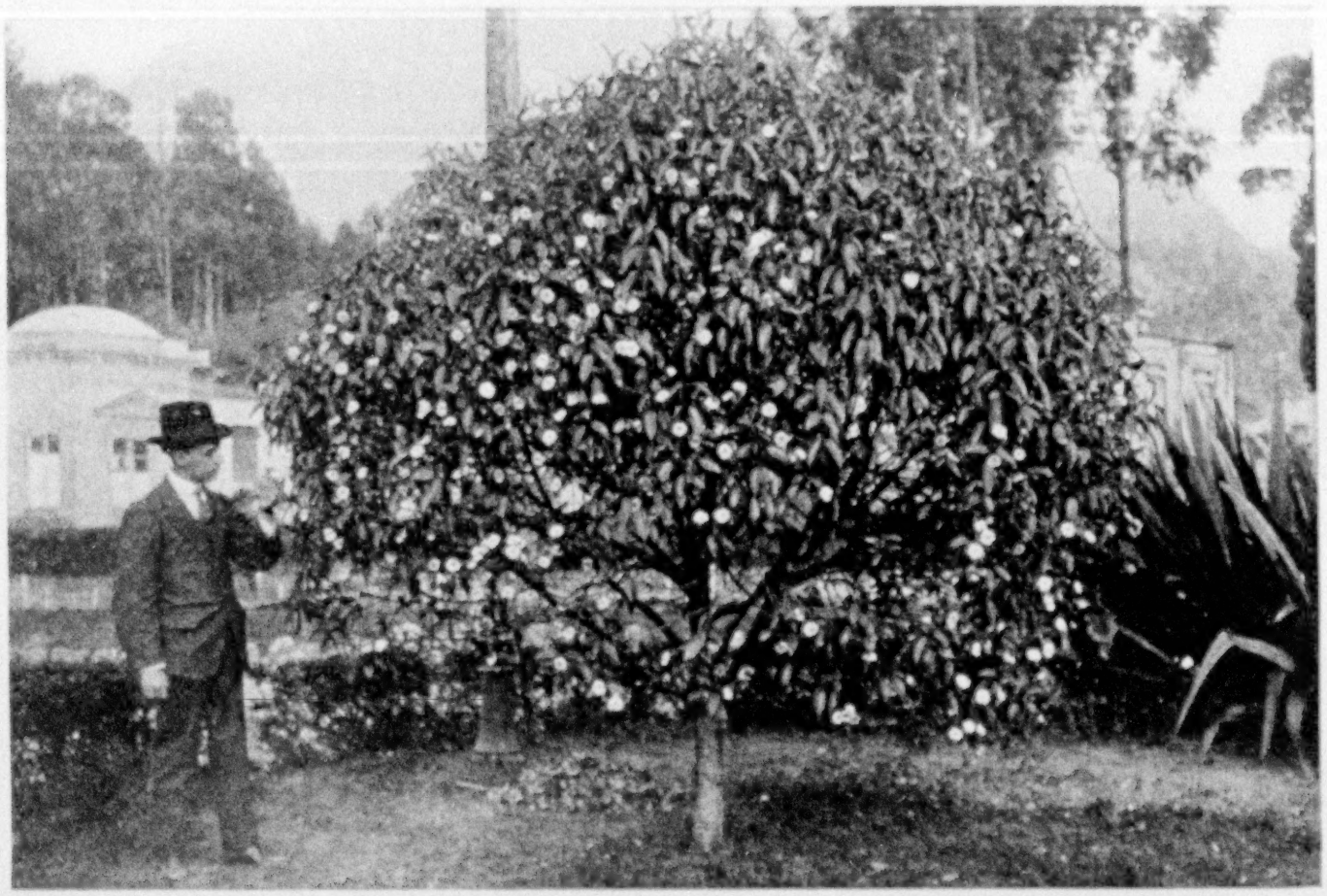
fruits and seeds, "we are going to Fusagasugá to hunt the giant blackberry. You will be ready to start to-morrow at 7. We shall take the early train for Sibaté and walk from the end of the line to our destination."

A look of anguish overspread the countenance of the assistant agricultural explorer. Latin Americans are not given to "hiking" like their North American brethren; indeed, it savors of indignity for a gentleman to be seen on foot in the Andes, unless he be within a few squares of his own residence.

But Hernando was game. He might lose caste by the journey, but he would risk it rather than have me suspect that he was unwilling to do anything which I would do.

"I shall purchase the railway tickets this afternoon," I continued; "and, by the way," feeling that I was on very delicate ground, "how are you accustomed to ride—second or third class?"

There was no hesitation on Hernando's part. "Señor," he said, with feeling, "I *always* ride second class. It would be impossible for me to go third class; that's



Photograph by Wilson Popenoe

THE "SIETE CUEROS," IN THE PARQUE DE INDEPENDENCIA, AT BOGOTÁ

The flowers of this Andean shrub, a species of *Tibouchina*, are remarkable for the various shades of color which they exhibit. Blossoms of rich blue, others of violet hue, and still others of mauve, may be seen on the plant at one time. This is due to the fact that they change color between the time when they first expand and the moment when they wither and fall.

where plebeians travel!" The day was won, and I purchased two second-class tickets.

The ordinary traveler in Colombia rarely thinks of going first class. Government officials, military officers, members of the clergy, and a few wealthy *hacendados* (ranchmen) are the chief patrons of this exclusive method of transportation, and of this group I suspect that all but the hacendados ride on passes. The real democracy of Colombia is found in the second-class coaches. As for the third-class—well, I could hardly blame Hernando, once I had seen the motley collection of peons, mule-drivers, and low-class women with squalling babies which filled this car.

At 7 in the morning we rolled out of the station and were soon beyond the suburbs. Broad haciendas stretched away on either side, with here and there expanses of waste land. To our left the mountains rose close by, while on our right the *sabana* (savanna) spread out 30 miles or more, until it met the hills of the escarpment, where, breaking through by a tortuous channel, the river of Bogotá leaps in a mighty effort to reach by one sheer jump the torrid valley of the Magdalena, lying far below. Thus are formed the Falls of Tequendama, rivaling those of the Yosemite in beauty.

A QUEST FOR THE GIANT BLACKBERRY

When we climbed down from the train at Sibaté it was drizzling gently. We groaned inwardly, as we looked at the muddy road winding up into the hills; then packed our supplies upon our backs and struck off.

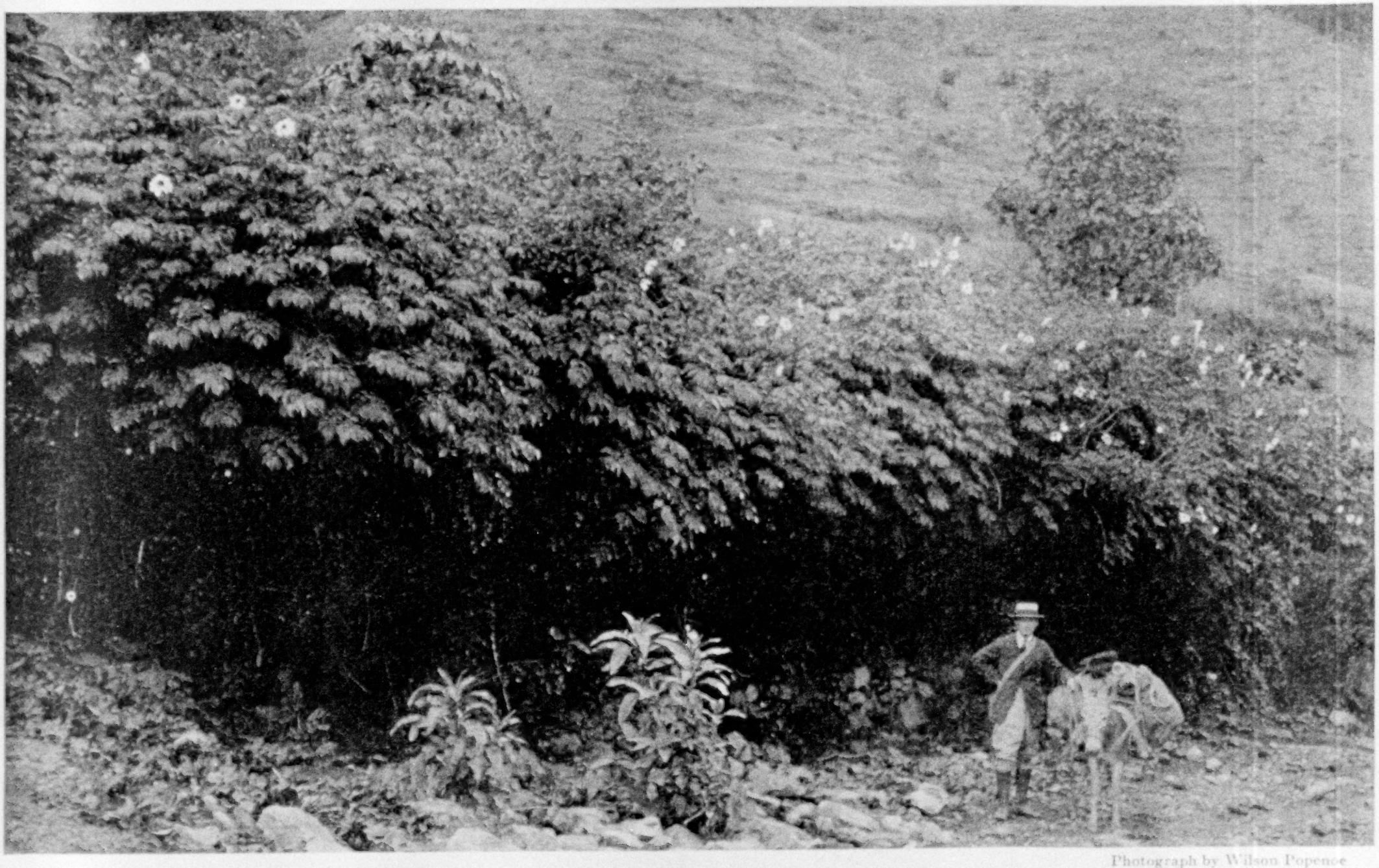
An occasional oxcart passed us, a mule train of charcoal, and horsemen dressed in the ruana and huge, baggy, cowhide trousers, known to Colombians as *zamarros*. Here and there along the roadside were small taverns, whose only stock in trade seemed to be vats of *chicha* and *guarapo*, fermented beverages which were being dispensed in large gourds.

Over the divide we went and down a steep zigzag trail, carefully graded and

Photograph by Wilson Popenoe

A COURTYARD OF BOGOTÁ

This building was formerly a monastery, but is now used to house the Post Office and certain other government activities. Roses and other flowers brighten its attractive patio. The man in the foreground is wearing the typical garb of the highland laborer—"Panama" hat, ruana, trousers of cotton drill, and alpargatas, or rope sandals.



Photograph by Wilson Popenoe

A HEDGE OF TREE DAHLIAS

This flowering plant (botanically known as *Dahlia maxonii*) grows in Mexico, Central America, and the northern Andes. It reaches 20 feet in height and bears starry pink or white blossoms, usually single, though double-flowered forms are occasionally found. Photographed on the road between Villeta and Albán, Colombia.

THE "CURUBA DE CASTILLA," A FRUIT OF THE NORTHERN ANDES

A handsome pink-flowered climber native to the Andean region produces this favorite fruit of the Bogotanos. It contains a large number of orange-colored, translucent globules of pulp, each having a small seed. The flavor is acid and highly aromatic.

THE BALÚ, WHICH GROWS ON TREES

The beans inclosed by this pod are nearly two inches long and half as thick. They have a pleasant, slightly sweet flavor and are prepared in the same manner as lima beans. The tree which yields them, *Erythrina edulis*, is cultivated in several parts of the Colombian highlands.

Photographs by Wilson Popenoe

Photograph by Wilson Popenoe

THE HARDY PAPAYA OF THE NORTHERN ANDES

This large melon-like fruit of tropical lowlands is well known to residents of southern Florida, the West Indies, and many other parts of the world. It is replaced in the Colombian highlands by a hardier species, whose fruits are much smaller.

cobblestoned, into a region of dense forest dripping with moisture from the clouds which blow up from the Magdalena Valley and impinge upon the escarpment. I felt a thrill as I realized that this was the region in which Dr. Frank M. Chapman,* of the American Museum of Natural History, had first observed the giant blackberry.

It had been some years since he visited Colombia, but the story which he told us on his return had not been forgotten. Indeed, the giant blackberry had been on the list of rare plants which I was to seek when I left Washington; but it had looked a long way off to me at that time. There was the lengthy journey up the Magdalena to be made, and then the trip southward from Bogotá. Now, at last, I was actually at the place where Dr. Chapman had seen this remarkable fruit! I strained my eyes, hoping to catch sight of it along the roadside.

Several days previously my imagination had been fired by the sight of several quarts of gigantic berries in the Bogotá market.

Impatiently we pushed on. I was tempted to leave the trail and go off hunting through the forest. But we needed another man to do the work properly and had planned to get him at Fusagasugá.

* See, also, "Over the Andes to Bogotá," by Frank M. Chapman, in the NATIONAL GEOGRAPHIC MAGAZINE for October, 1921.

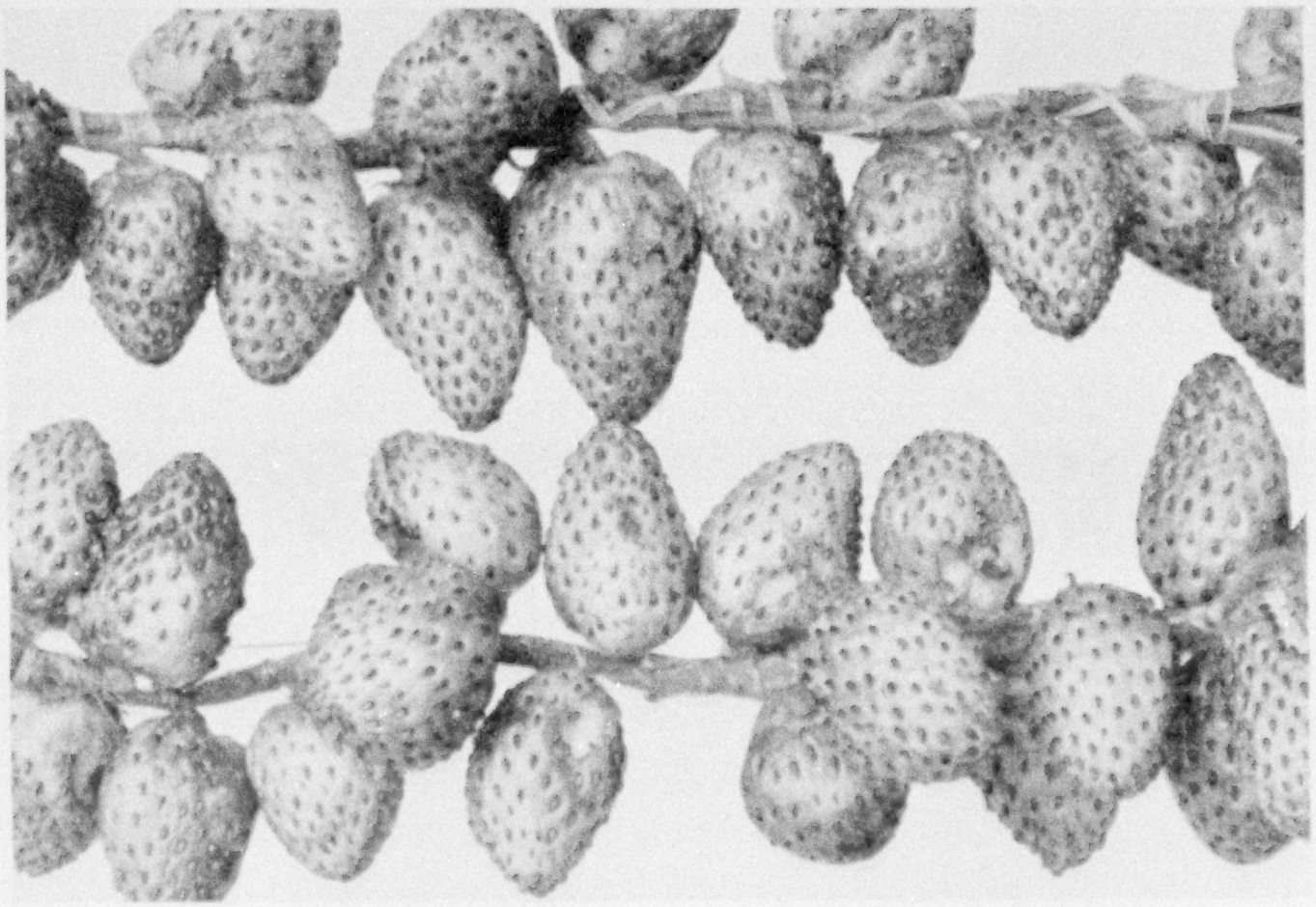
Photograph by Wilson Popenoe

STATELY ROWS OF EUCALYPTUS TREES

This native of Australia was introduced into Colombia about 50 years ago. It has become one of the most conspicuous features of highland landscapes. It is used for street and avenue planting, as well as for the production of timber and fuel. The attractive walk here shown is in the northern part of Bogotá.

Photograph by Forrest Clark

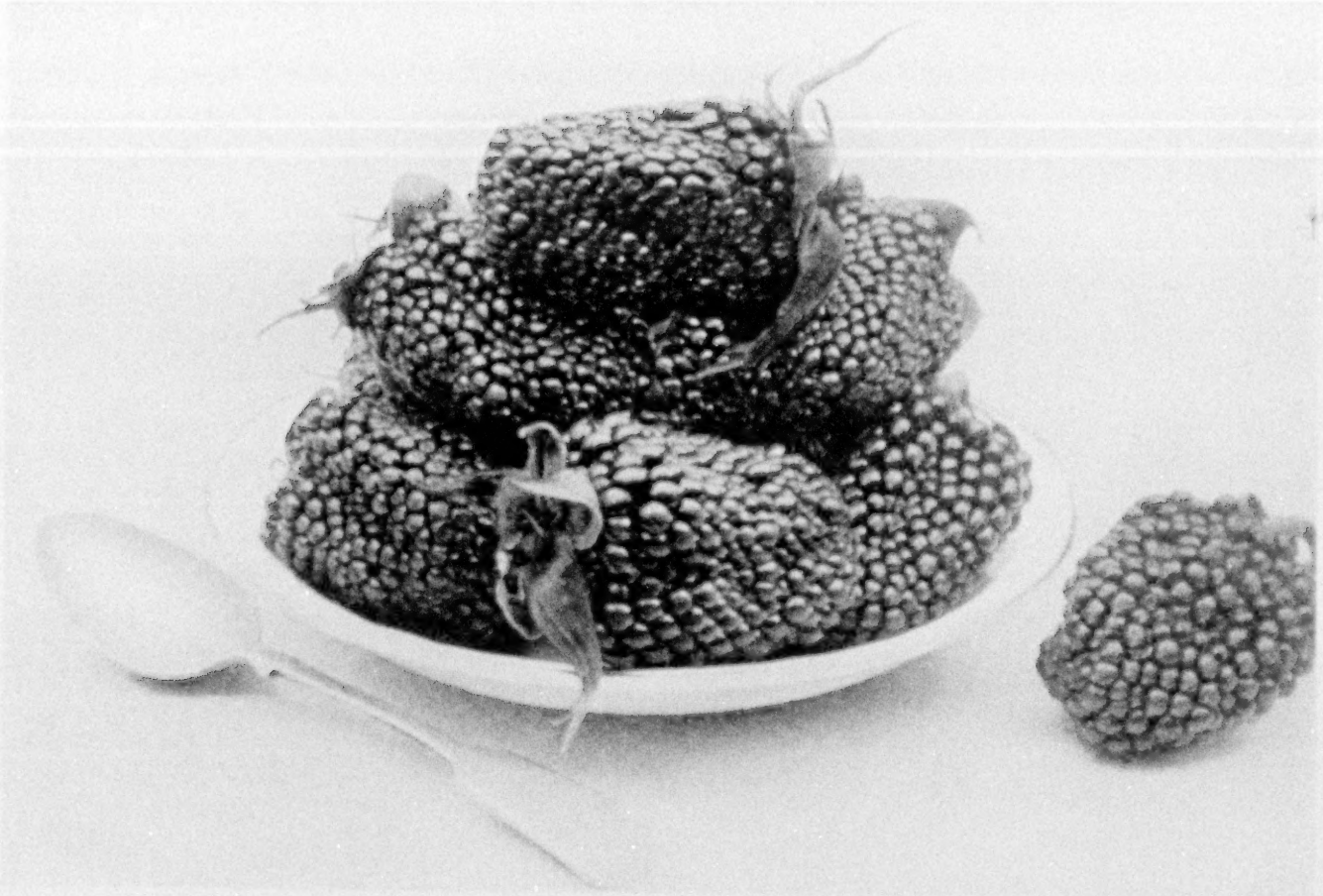
EGGS WHICH HAVE BEEN SCRUBBED TO A PEARLY WHITENESS IN THE BOGOTÁ MARKET



Photograph by Wilson Popenoe

WHERE STRAWBERRIES ARE SOLD BY THE YARD

Two kinds of strawberries are sold in the markets of Bogotá—one, the wild European variety, *Fragaria vesca*, which has become naturalized in the Andes, and the other, the large-fruited Chilean species, *Fragaria chiloensis*. The last named is rare and is considered a great delicacy; the fruits are strung together by their stems and hung up in the market, where the customer can purchase as many feet or yards of strawberries as his purse will permit.



Photograph by Wilson Popenoe

BERRIES TOO LARGE TO BE TAKEN AT A SINGLE MOUTHFUL

This giant blackberry, from the mountains near Fusagasugá, has been named the Colombian berry in honor of its native country. Its botanic name, *Rubus macrocarpus*, seems unusually appropriate, for it is one of the largest berries in the world. Single specimens sometimes measure more than two inches in length by an inch and a half in thickness. Plant breeders may find this berry valuable for hybridizing with North American forms, in order to produce new varieties of unusually large size.

It was nearly sundown when we entered that town. We found comfortable quarters at the small hotel, and a hot sancocho, together with fried plantains, rice, and potatoes. I was tired and stiff and turned in as soon as we had finished the meal. Hernando, even less accustomed to long tramps than myself, sat up another hour or more, applying native remedies to his feet, which were galled by the steep descent of the afternoon.

A NIGHT OF DISTRESS

We turned out early and looked about for a man to carry the baggage and assist us in our hunt for plants. Marcos seemed to meet the requirements and was added to our party. We braced him for the journey with a good meal and took the road back toward El Peñón, the region we had passed on the previous day.

The small tavern of this name stands beside the rocky trail and offers none but the most meager supplies. The place makes no pretense of furnishing quarters overnight, so that we were forced to put up with two wooden benches which had not even been designed to serve as beds. There were no blankets available, and the building was already enveloped in a cold Andean fog when we arrived, in the late afternoon. I had a thin cotton blanket, Hernando a muffler, and as for Marcos I don't think he had anything at all, which was probably his customary bedding.

Stretched upon the bench, wrapped in my inadequate blanket, I attempted to pass the night with the minimum of suffering. It was one of the longest and hardest vigils I have ever experienced. The room was not boarded up securely, and the chill, damp wind off the mountain tops came through on all sides. My bones ached incessantly, and when I finally arose, at dawn, it was to find Hernando and Marcos shivering in the lean-to kitchen, where a small fire was being kindled by our hostess.

Photograph by Wilson Popenoe

AN EDIBLE TUBER OF THE ANDES

These roots, known in Bogotá as cubios, are produced by a plant which is closely related to the nasturtium. Botanically it is known as *Tropæolum tuberosum;* it grows in the cool, moist climate of the higher Andes and has been used for food since prehistoric days. Cubios are boiled with meat or other foodstuffs.

We made out a breakfast of sorts and proceeded to business.

In the excitement of being at last in the very region where the giant blackberry had first been discovered, my discomfort was soon forgotten. Marcos led the way, machete in hand.

A drizzling rain was falling, and the boggy ground beneath our feet suggested that this must be the usual condition. It was one of the most curiously fascinating regions I have ever seen. Moisture, moisture everywhere; everything was dripping with it, and the plants looked as if they had never seen brilliant sunshine.

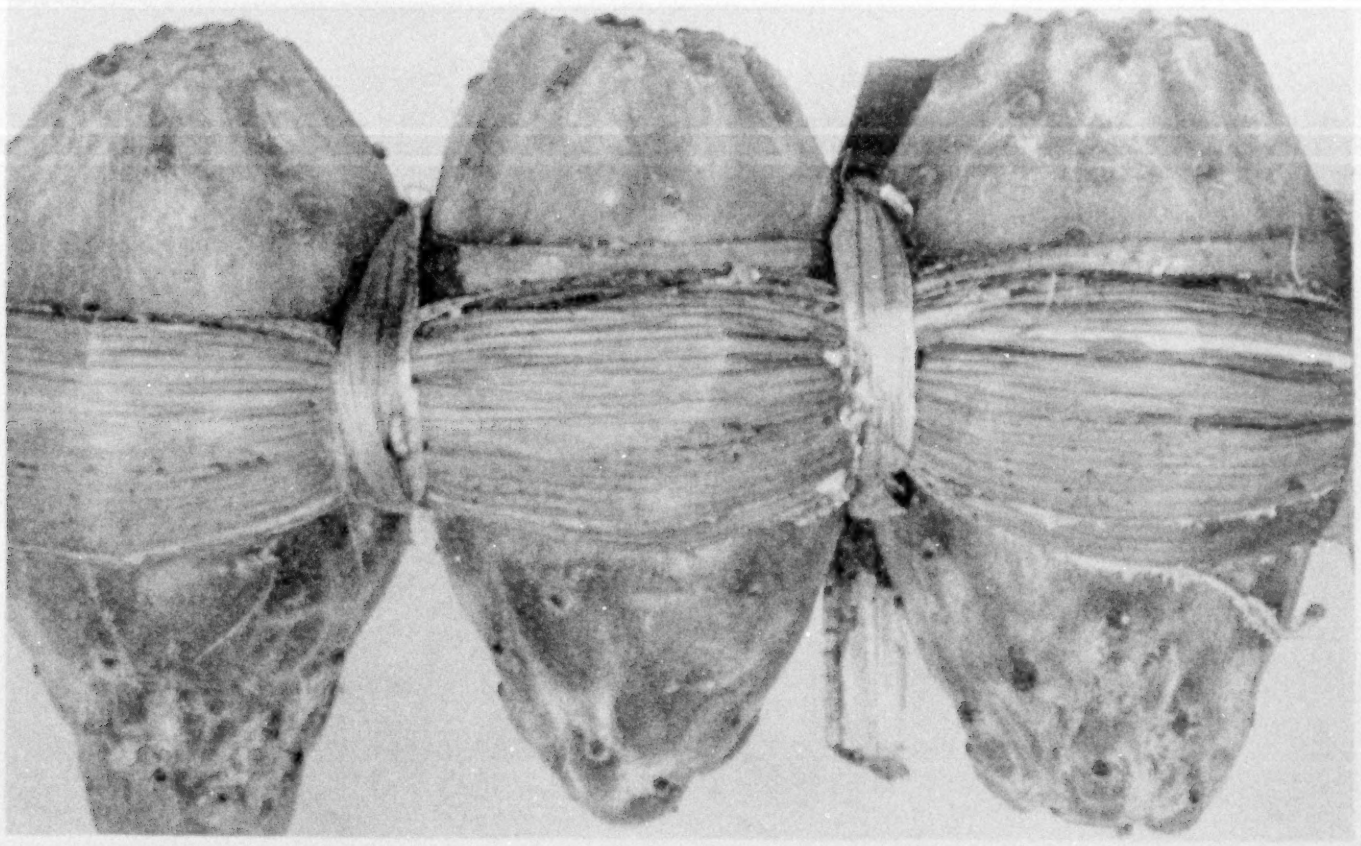
THE GIANT BERRY IS FOUND

Suddenly Marcos stopped and reached forth with his machete to cut a branch which crossed our path. Looking up, I saw that it bore upon its outer end several red fruits the size of large walnuts—undoubtedly the giant blackberries for which I was searching. I grasped the branch with a shout.

We dug roots, picked fruits, and took photographs as best we could, for it was drizzling steadily and we felt certain that it would be raining harder by afternoon. The plants were abundant, and their long, prickly canes scrambled to lengths of 15 feet or more. Their purple flowers, an inch across, were only less interesting than the gigantic berries, which I found to be flavored like loganberries, but to have larger and harder seeds.

We packed up our spoils and took the trail for Sibaté. It was a long, hard climb through the rain, but we finally got our precious freight on board the train, and late that night found ourselves back in Bogotá, where Bernardo, the youthful manager of the hotel in which I was stopping, was busily engaged in writing ardent verses to the photograph of a young lady, which stood upon the table in my room.

Bernardo had not, of course, seen the young lady; indeed, he did not even know her name, which seemed to "cramp his style" a bit. But he had fallen violently in love with her, he explained to me, and



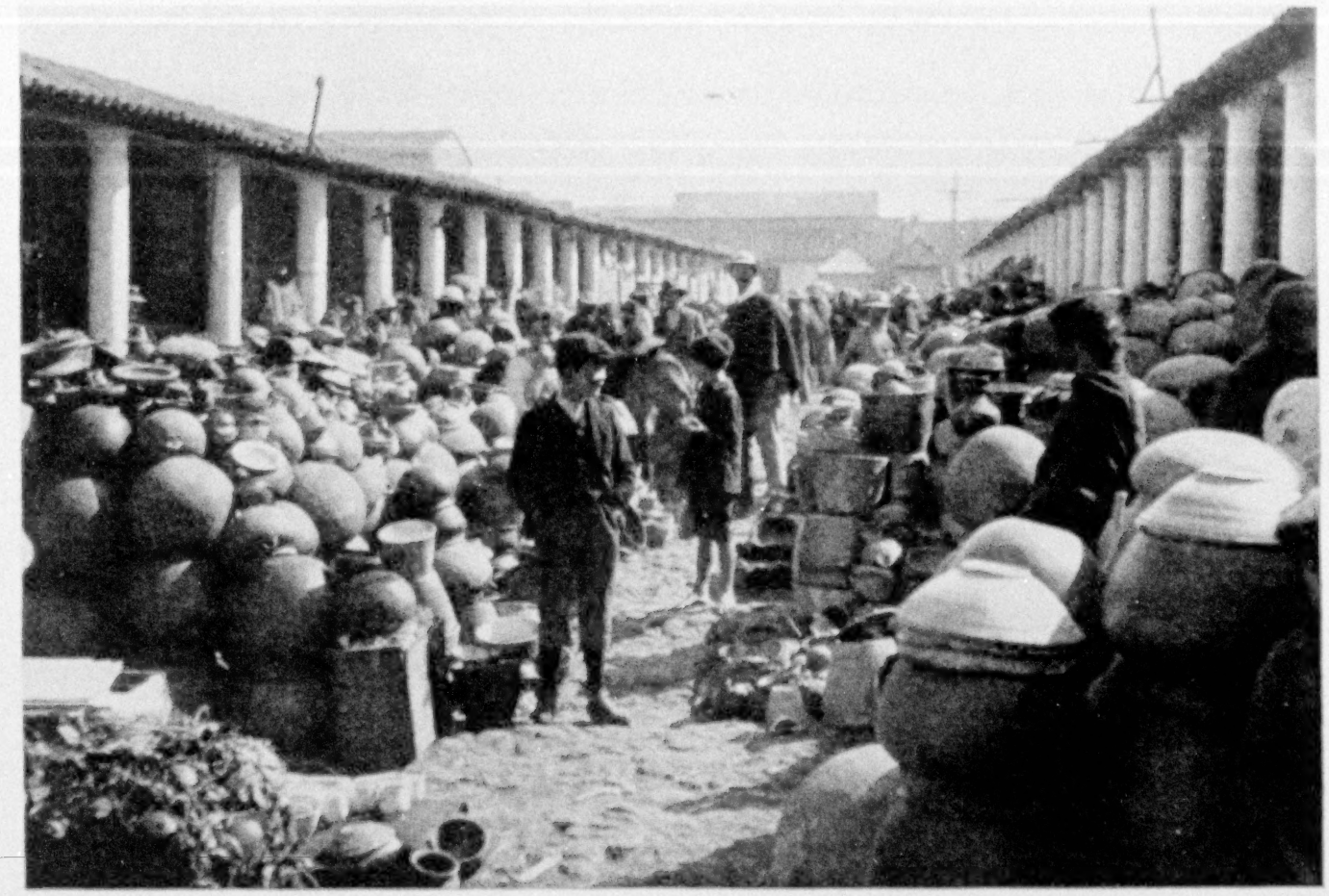
FIVE CENTS' WORTH OF TUNAS

The fruits of the tuna, or prickly pear, are sold in the Bogotá market tied with a dry banana leaf to form bundles of three. These fruits, which are similar to those of several North American cacti, are popular among the poorer residents of Bogotá. They are dark red in color, with many seeds and soft, juicy flesh of sweetish flavor.

Photographs by Wilson Popenoe

TROPICAL FRUITS IN THE MARKET PLACE

Here are to be seen limes, bananas, and papayas. Fruits of the Temperate Zone, such as apples, peaches, and pears, are grown successfully on the Sabana of Bogotá, but tropical species which will not withstand frost must be produced in regions of lower elevation, such as the Magdalena Valley.



Photograph by Wilson Popenoe

THE POTTERY SECTION OF THE BOGOTÁ MARKET

Because no iron is available locally and because freight charges from the Caribbean coast are necessarily very high, relatively few iron utensils are used in Bogotá. The poorer classes especially do most of their cooking in pottery vessels such as the ones shown here.

asked my permission to send her some of the verses he had written during my absence, together with a photograph of himself, on which he had inscribed in English (a language he had not yet mastered): "To Anita, Light of my Life, Queen of my Sole!"

COLOMBIANS AT A PICNIC

After this somewhat arduous journey I felt that I could afford to declare a holiday. Perhaps I was influenced in this determination by an invitation which I found awaiting me on my return. The Herreras, fellow-travelers of the voyage up the Magdalena, wished me to join them in a *dia de campo* (picnic) at their country place, near Cajicá, some miles to the north.

We left the city on the morning train—a dozen of us, more or less—and I believe the guitars which went along averaged pretty nearly one to each person. It was my first experience of the sort and I was glad of this opportunity to come into intimate contact with an institution of such standing and popularity in Bogotá as the dia de campo.

Various servants went with us, carrying hampers of viands and countless bottles of light beverages. We clambered down from the train, with much shouting and pushing on the part of the servants, as they hastened to pass hampers, guitars, wraps, and liquid refreshments out of the car windows and through the doors.

We walked down the broad level road for half a mile, until we came to the hacienda. It was just such a morning as we experience in Maryland during the month of May—the air was fresh, balmy, and filled with the fragrance of growing things. Birds were singing in the meadows, where herds of cattle grazed contentedly. The cornfields, visible on all sides, were broken by patches of wheat and barley. It was hard for me to realize that I was only five degrees from the Equator.

The servants set about the preparation of luncheon, while the rest of us walked through the attractive garden, congregating finally in the large *sala*, or parlor.

Photograph by Wilson Popenoe

SOME STAPLE FOODSTUFFS OF THE NORTHERN ANDES

The rough-looking roots piled in front of the woman are arracachas, which taste somewhat like parsnips when boiled (see text, page 131). On her right are ears of green corn, while plantains and cassava roots appear in the background. Photographed in the Bogotá market.

While the girls recited verses, several of the young men tuned up their guitars, and then they took turns at singing couplets of the Colombian highlands.

Simple, sentimental, frequently with tragedy as the keynote, these songs are one of the characteristic features of the country. The plaintive voice of Humberto filled the room with melody as he sang a somber stanza; and then Octavio, with a flourish of chords, struck up an even more tragic rejoinder.

The girls picked flowers, and amid much bantering and bashful laughter placed them on our coat lapels. Luncheon was announced, and we rushed into the dining room with all the enthusiasm and abandon of a crowd of schoolboys. The table groaned with good things. Roast chicken was the *pièce de résistance;* and there were sandwiches, small cakes of various sorts, and fried plantains and boiled potatoes; then, finally, the excellent black coffee of which Colombia so justly boasts.

Later, we danced the fox trot to the tune of the latest popular music from the States, played upon the phonograph; and then the young Colombians turned their attention to the *pasillo,* a slow native waltz, which I endeavored in vain to master, though the girls assured me that my progress was remarkable. Suddenly someone discovered that it was train time. There was a scramble for coats and hats, hasty gathering together of bouquets which had

Photograph by Wilson Popenoe

A WAYSIDE BEGGAR

His crutch, mute evidence of his affliction, is prominently displayed in front of him. The well-worn sandal with rope sole, known as alpargata, is of the type brought from Spain by the conquerors.

been picked to take home, and we bundled ourselves off to the station once more.

I had the pleasure of visiting the northern part of the sabana a second time, on which occasion Hernando and I traveled to the end of the railway line at Nemocón; and then, taking to the highroad, we tramped back toward Bogotá a distance of 10 or 15 miles, collecting plants along the wayside.

It was another such day as the sabana had given me at Cajicá: the air was fresh and cool, while the fields of corn and barley rustled softly in the breeze. The broad plain stretched away on either side, dotted with the houses of great haciendas and with the small homes of humbler folk. Clumps of eucalyptus trees broke the monotony here and there.

THE ANCIENT CHIBCHA INDIANS WERE AN INDUSTRIOUS PEOPLE

I had been reading the history of Colombia during spare moments in Bogotá, and it was not difficult for me, as I trudged along the broad road, to repeople these fields, in imagination, with Chibcha Indians, just as they were in the days before the Conquest.

They must have led industrious lives. With no domestic animals to assist them in the cultivation of the land, nor with any of large size for use as food, they tilled the fields with their own hands, and

wrought from them a living in the form of maize, potatoes, the other Andean root crops which I have mentioned earlier in this article (see text, page 132), and a few more foodstuffs.

According to a Colombian authority, Vicente Restrepo, the Chibchas were one of two native American races which made use of money in carrying on trade. Their coins, he says, were small disks of gold. They had many gold ornaments, also, as well as emeralds, which were found abundantly in their territory. The emerald mines of Colombia are to-day one of the world's principal sources of these precious stones.

They had an accurate calendar and hieroglyphic figures attached to certain numerals which referred to phases of the moon, sowing and harvesting of crops, and to certain superstitions, but they had not attained to the development of a written language.

Photograph by Wilson Popenoe

A BASKET OF COLOMBIAN BERRIES

Hernando Zamora, the author's native assistant, is here seen exhibiting a basket of fruit gathered in the mountains of El Peñón, on the road to Fusagasugá. These berries are sometimes sold in the markets of Bogotá, but they are never produced in cultivation. In color and flavor they strongly resemble loganberries. The plant will not withstand much frost and must have a cool, moist climate; hence it seems improbable that it can be grown successfully in many parts of the United States.

Along with their virtues they apparently had some vices, for the early chroniclers pictured their fiestas or celebrations as debauches of the worst sort. At the time of the Conquest their territory comprised only the sabana of Bogotá, about 150 miles long by 40 wide at the broadest point, yet it is believed that they numbered more than a million souls.

They were ruled by two chiefs, the Zipa and the Zaque, one in the north and the other in the south. They had a complex religious system; the sun and moon were objects of adoration, and they preserved traditions of ancient worthies who had preached to them and who had been converted, in the course of ages, into heroes and demigods.

Such, then, was the race which peopled this plain when Gonzalo Jiménez de Quesada came upon the scene and founded the city of Bogotá, in 1538. The Chibchas did not achieve a civilization as high as that of the Aztecs in Mexico, the Maya in Guatemala and Yucatan, or the Incas in Peru; yet they were making progress and might have gone far, had not the cata-

Photograph by Wilson Popenoe

POTATO VENDERS IN THE MARKET OF BOGOTÁ

The Colombian capital's great market place is divided into a number of sections, each of which is occupied by the venders of some particular group of products; thus there is the pottery section (see page 146), the basketry section, one devoted to fruits, another to root crops, and so on.

clysm of the Spanish Conquest wiped them off the map.

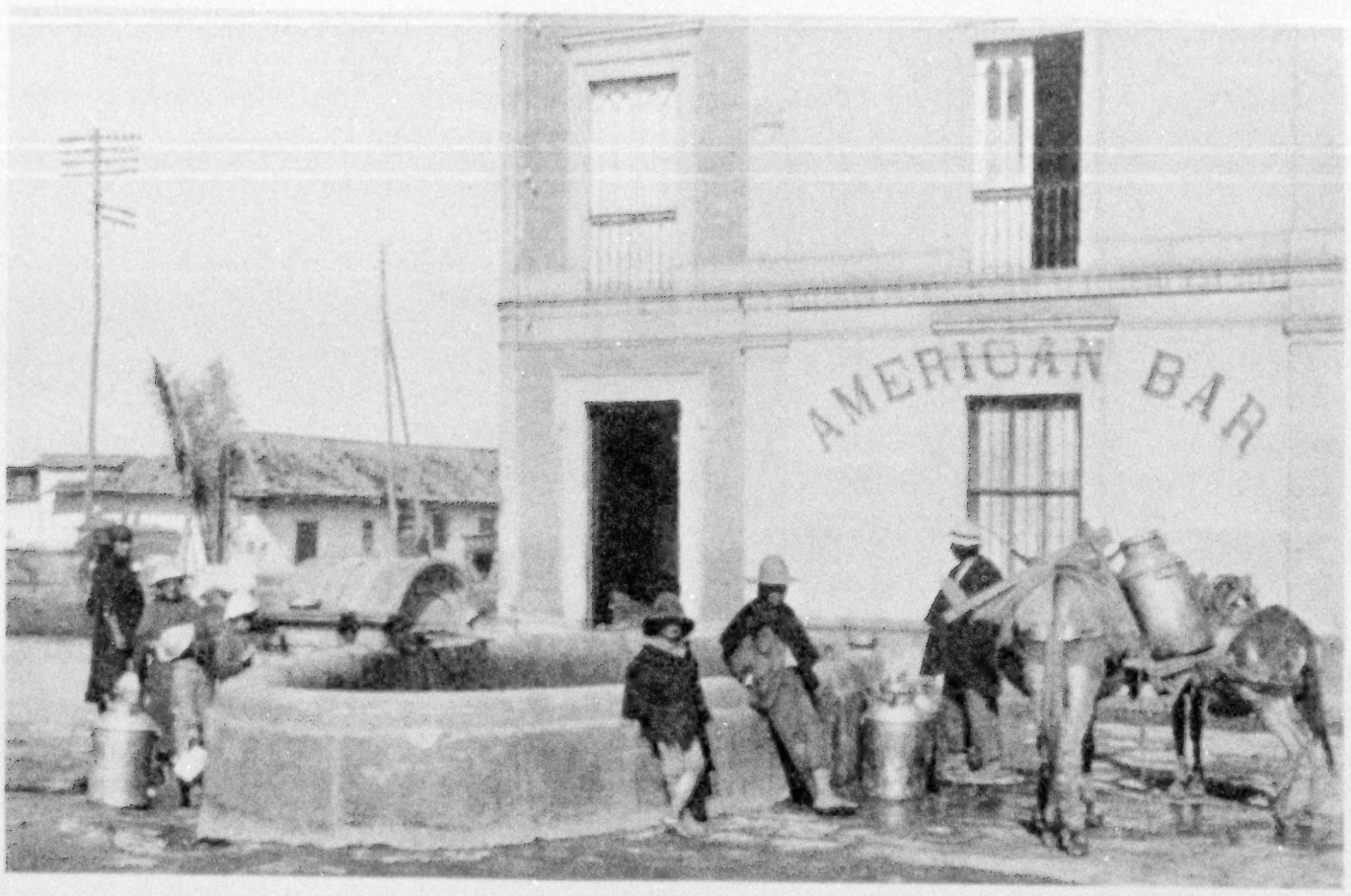
DEPARTURE BY TRAIN IS A CIVIC CEREMONY

More and more, as I rambled about the plateau, I became possessed with the desire to go down to Honda, on the Magdalena River, and, following the old overland route, travel on foot back to Bogotá. This would bring me over the trail built by the Spanish in colonial days—the same trail which was used by Colombians of modern times until the railway from Girardot was constructed.

The journey promised to be a hard one if I made it on foot, as I planned. I wanted a companion, and finally persuaded Thompson, of the American Legation in Bogotá, to accompany me. We provided ourselves with two of the best native-made ruanas the market could offer, with a few tins of bacon, crackers, sardines, and other comestibles, and then, at 6 o'clock on a chilly morning, made our way down to the railway station.

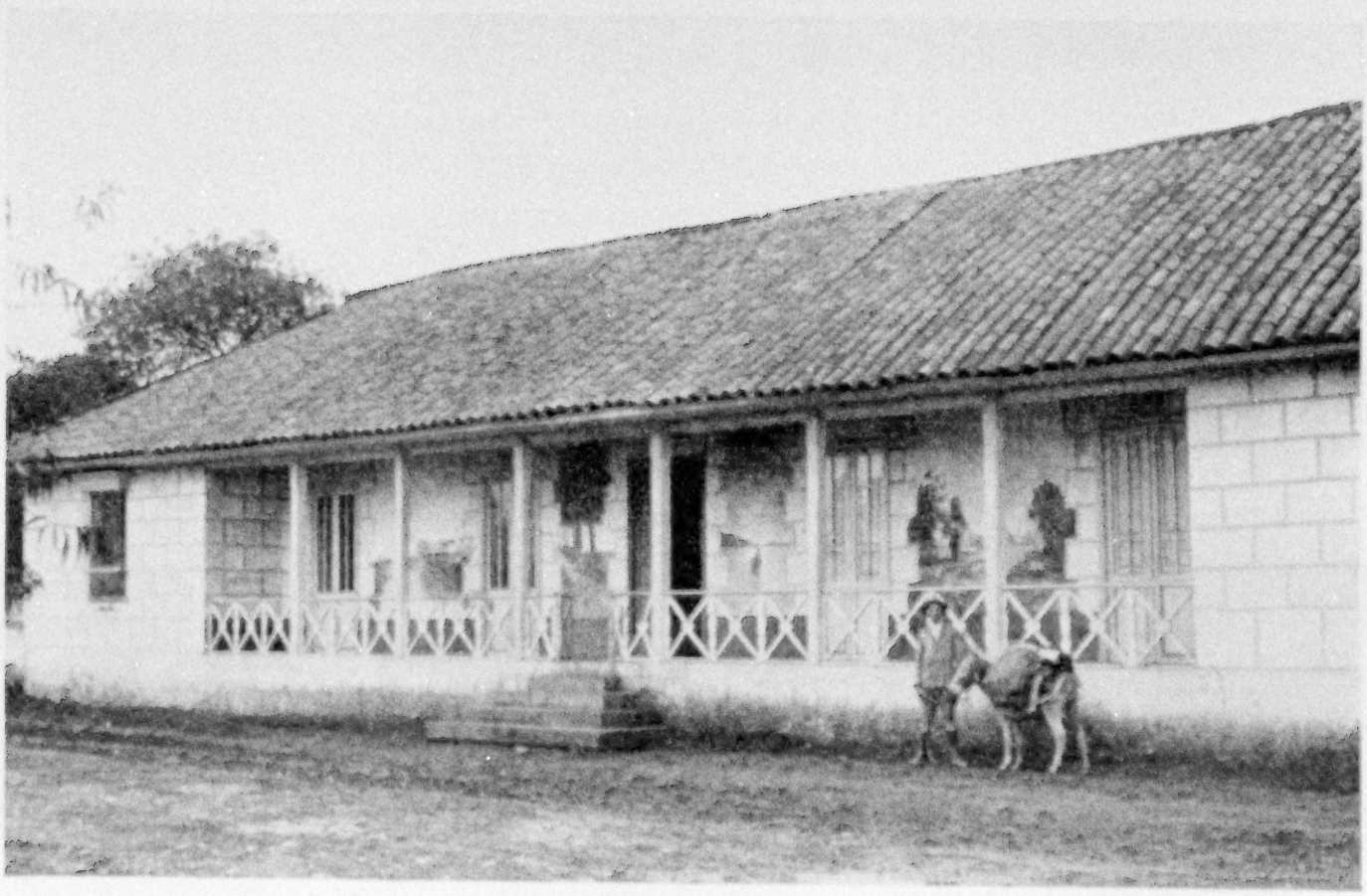
In many inland cities of Latin America the departure of the daily, semiweekly, or perhaps weekly train for the coast is an event of social importance. In few of them, however, does it assume the international aspect which attaches to the departure of the train for Girardot. Bogotá is a large city, by Latin American standards, and the people do not have overly much to amuse them. Furthermore, travel from this remote Andean capital to the Caribbean coast is not really heavy.

For all these reasons, the Bogotanos rarely fail to take full advantage of the departure of a friend for Europe or the United States. They come down to the train an hour before it is scheduled to leave—7 o'clock in the morning; there are



FETCHING THE DAY'S SUPPLY OF WATER

The poorer classes in the outskirts of Bogotá, who are unable to have water piped into their homes, obtain their supply daily from the nearest *pila*, or open tank.



Photographs by Wilson Popenoe

A COMFORTABLE COUNTRY RESIDENCE NEAR FACATATIVÁ

Well-to-do farmers of the Colombian highlands live in attractive homes such as this, built usually of adobe bricks covered with plaster, and sometimes, as in this particular instance, with brightly colored landscapes painted upon the walls.

Photograph by Wilson Popenoe

THE ROYAL ROAD ACROSS THE ANDES

During the days of Spanish colonial administration an excellent road was built from Bogotá across the Andes to Honda, on the Magdalena River, whence the seaports of the Caribbean coast could be reached by boat. With the coming of the railroad, in relatively recent times, this road is no longer as important as in the past, but it is still much used, especially for the transportation of freight by mule trains.

flowers and sweetmeats to be presented; and good-byes are said and resaid many times before the train finally pulls out.

It is considered a particularly nice touch for a gentleman to accompany his friends as far as Facatativá, whence he can return to Bogotá on the afternoon train. I have also been told that Bogotanos still remember with singular affection an American minister of years gone by who always entertained his friends at a sumptuous banquet on the eve of their departure. After the party broke up at the first streak of dawn, he accompanied them to the train in his evening clothes and, dressed in this Bohemian fashion, rode with them to Girardot, a whole day's journey from the capital!

TRAVELERS AND THEIR HORSES PROCEED ON THE SAME TRAIN

Two sharp blasts from the whistle indicated that we were about to start. There was a tremendous scrambling on board, accompanied by an equally tremendous scrambling off the train of friends who had come to say good-bye. We pulled out across the sabana.

Prosperous-looking ranchmen, dressed in full riding outfit, spurs included, clambered down from our car at each small station. Their riding animals, saddled and ready for the road, were traveling in a stock car on the same train. The door was opened and the horse led out; its owner mounted, dug his spurs into the animal's flanks, and was off across the plain. The convenience of the system aroused our frank admiration.

At Facatativá, while changing cars, everyone had time to take a cup of steaming coffee, always a grateful opportunity in the chilly air of this altitude—more than 8,500 feet above the sea—and then we started down the steep slopes of the escarpment, our small engines, one ahead and one in the rear, puffing vigorously as they strove to hold down our speed.

Everyone in Colombia knows Esperanza. It is, or was originally, a coffee

A FIBER PLANT OF THE ANDES

The fique plant, *Fourcroya macrophylla*, is cultivated in the higher Andes for its fiber, which is used for making cordage, sandals, coarse sacking, packsaddles, and other articles of everyday use. In the background may be seen the densely wooded slopes of the rain-forest zone above Fusagasugá.

Photographs by Wilson Popenoe

THE TAVERN OF EL PEÑÓN (SEE TEXT, PAGE 143)

In this small hostelry, high up among the clouds, the author spent an uncomfortable night while searching for the giant blackberry. Marcos and Hernando stand beneath the thatched eaves. The rocky trail to Fusagasugá passes in the foreground.

Photograph by Wilson Popenoe

A DOORWAY IN THE TOWN OF GUADUAS

The species of passion vine (*Passiflora quadrangularis*) which trails over the wall is known as *tumbo* and *badea* in the northern Andes. Its fruits, sometimes as large as muskmelons, contain a subacid juice of pleasant flavor.

Photograph from Wilson Popenoe

ENJOYING A DAY IN THE COUNTRY

The author took a brief respite from the arduous labors of plant-collecting to participate in a *dia de campo*, or picnic, at Cajicá (see text, page 146). The Colombian picnic is much like the North American and is numbered among the favorite diversions of the Bogotanos.

plantation on the slopes of the Andes, at an altitude of 4,000 feet—an elevation which means, in this latitude, that the air is always soft and balmy, devoid of that harsh chill which characterizes the climate of Bogotá.

With the arrival of the railway, a commodious hotel was erected at this spot, and all trains stop here for breakfast, the Latin American equivalent of our luncheon.

Occasionally a timid spirit, when ascending from the hot Magdalena Valley to the plateau of Bogotá, stops here for a day or two, in order to make less abrupt the transition from one climate to another. A young Chilean who came up with me from the coast had orders to don heavy underwear upon reaching this point, to stop two days, and to cover his mouth with a muffler after dark, on penalty of exposing himself to imminent danger of pneumonia if he failed to take these precautions.

It was always hard for me to pass Esperanza, even though I did not have the Chilean's instructions as an excuse for stopping there. It is an idyllic spot; to one side there are broad vistas down onto the vast valley of the Magdalena; to the other the high Andes rear their rugged heads into the clouds. And there is a swimming pool into which tumbles a small stream of crystal-clear water, while the food which is served at the hotel would whet even the most jaded appetite.

But we were not stopping this time. We pushed ahead to Girardot, which we reached that evening, and on the morrow we boarded one of the comfortable little steamers which ply the upper Magdalena. Having the current behind us, we made the journey to Beltrán in a day. Here we changed to the train, which brought us to Honda in a few hours' time.

TRAVEL WITH A BURRO

We established ourselves in the small but comfortable hotel, and set about purchasing a burro—one which was not too expensive, but which would at the same time carry our bedding and supplies over the long trail which was before us.

Burros there were in abundance, but

Photograph by Wilson Popenoe

A RELIC OF COLONIAL DAYS

That the Spanish conquerors built well is evidenced by many of their residences which are still in use. This is the type of home built in the highlands of Colombia during the sixteenth and seventeenth centuries. The coat of arms above the door indicates that it originally belonged to a nobleman.

few of them were for sale. We tramped through the streets, approaching the driver of every animal and the owner of each one we saw tethered in a dooryard. Finally an old fellow, enticed by the lure of immediate profit, yielded to our spot cash offer of 25 pesos. We started toward his home, where he was to take off the packsaddle which our future companion was then carrying and turn him over to us.

Thompson counted out the money, while I undertook to ascertain something of the burro's habits and requirements.

"What shall we feed him?" I asked.

"Just let him pick up what he can find round about; only see that he gets plenty of water. The important part is the water, *lots* of water," was the reply.

Thinking he might fare badly on the trail if we adhered strictly to this regimen, I ventured to inquire if it would do any actual harm for the burro to eat corn.

"Oh, he doesn't like corn," answered the old fellow; "in fact, he won't touch it."

With Thompson in the lead, we set forth upon our journey. The trail was dry and rocky, the surrounding country likewise; and it was decidedly warm. Nevertheless, we stuck to it persistently, stopping every quarter of an hour to readjust the pack, which we had not yet learned to rope in place with that degree of efficiency which characterizes the Andean mule-driver.

Darkness had already overtaken us when we reached the little tavern of Tocuy. Gabriel, the burro, was turned loose in the corral, while we prepared for ourselves a supper of bacon and eggs. Then, with gracious permission, we swung our hammocks under the broad eaves of the building and turned in to sleep.

A TROUBADOUR SINGS FOR LODGING

From the peaceful depths of slumber I was aroused by the sweet notes of a guitar and the plaintive tones of a voice singing a tale of unrequited love. I opened my eyes. The whole valley was flooded with moonlight and the stars shone brightly overhead. The air was still, with that heavy stillness known only to the tropic night. I listened.

Once more the plaintive notes broke the silence. It was a wandering troubadour desiring a night's lodging and singing to be admitted to the tavern. It was late and the occupants were not to be aroused by ordinary means.

Finally I heard the heavy bolt shoot back and the lumbering door creak open on its hinges. The troubadour passed in and I was left to reflect upon the romance of this simple touch—a bit of medieval Spain which has persisted in this remote corner of the Andes and which I could not but hope might yet last for other centuries.

A BEGGAR EXCHANGES POETRY FOR ALMS

At daybreak we were up and upon the trail. The ascent grew steep and our throats dry, as we kept on and on without finding a spring or small stream from which we could drink. At last we reached Las Cruces, a tavern on the mountain side. Here we stopped to enjoy the luxury of Bogotá beer and a bowl of sancocho. As we were finishing our meal we were approached by a tall youth in ragged garments, who, drawing himself up in stately dignity, bowed as he addressed us:

"Sirs, I have need of your attention for a moment. You will, I know, pardon my boldness in thus addressing you, but I am going to Bogotá to have an operation on my leg and I am in need of funds. Far be it from me to ask for alms; but I have here some poetry—second-class poetry, it is true—which I am selling to defray the expenses of my journey. However, I am not going to ask you to buy it. I am going to make you a present of these verses, and you can tender me whatever the generosity of your nature suggests."

What beggar in the United States could have commanded the elegant phraseology of this ragged native of the Andes? And as I thus reflected I read the verses and saw that we had been grossly defrauded of our ten cents; for they were not second class, as he had stated, nor even third, nor yet fourth. They were execrable—a thoroughly bad investment!

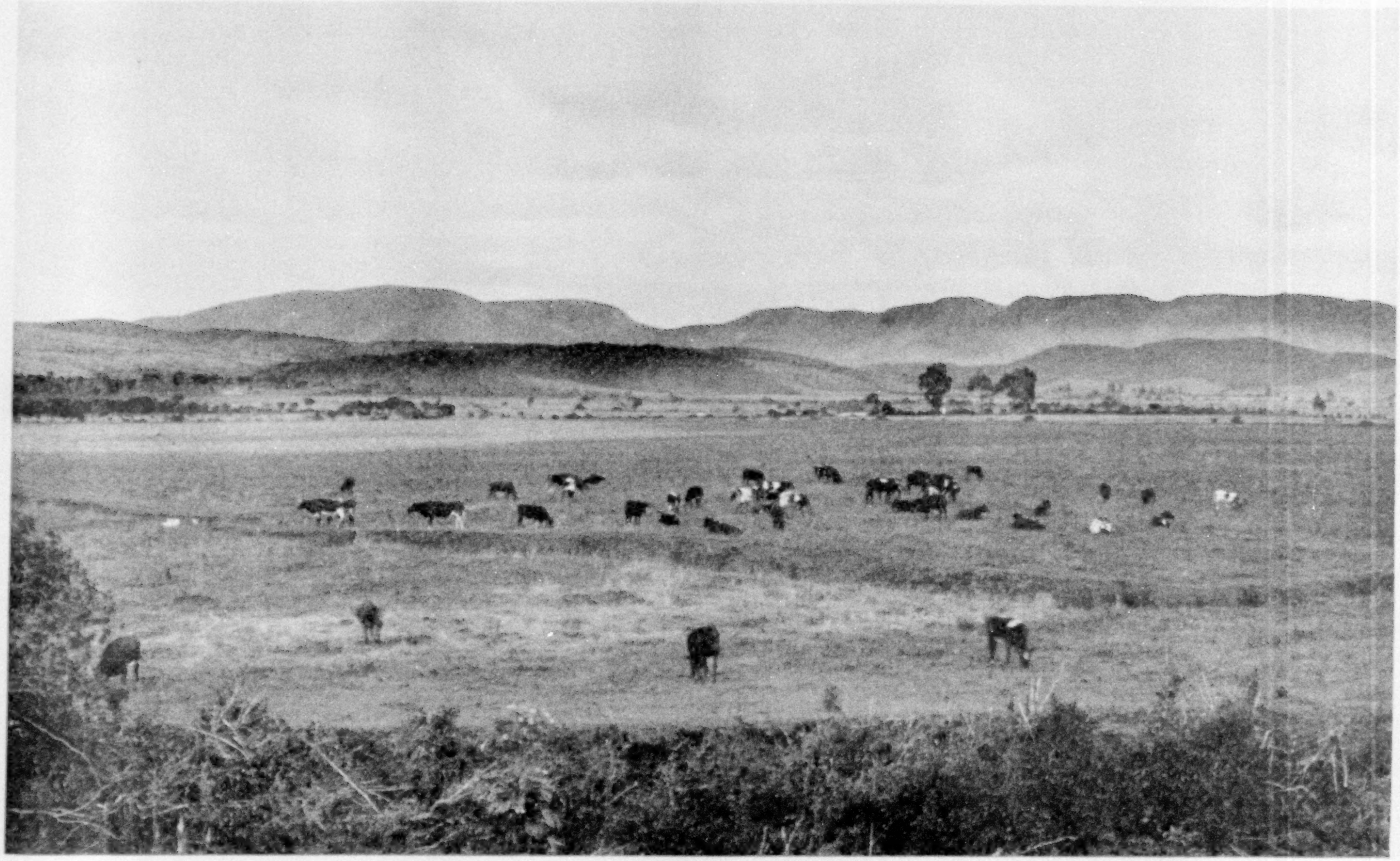
FOOT TRAVELERS ARE SOCIAL OUTCASTS

It was during this same day that we began to appreciate the handicap under which we were traveling. It had never occurred to us when we set out that we would be social outcasts because we were

Photograph by Wilson Popenoe

ALONG THE EDGE OF THE SABANA

The sabana of Bogotá is a fertile interandine plain, about 150 miles long by 40 miles wide at its broadest point. The city of Bogotá lies at its eastern edge. This photograph, taken from the heights above the suburb of Chapinero, shows the eucalyptus groves which skirt the city, and the church of Montserrate, which overlooks it from the mountain on the extreme left.



Photograph by Wilson Popenoe

HERDS GRAZING ON THE SABANA

Cattle-raising is one of the principal industries of the Colombian highlands. In the climate of Bogotá (8,600 feet), pasture grasses of the Temperate Zone grow luxuriantly, in spite of the fact that the region is only five degrees from the Equator.

on foot; yet such appeared to be the case. Two or three small inns at which we applied for lodging turned us down with flimsy excuses.

In Colombia a gentleman goes always on horseback. To the simple inhabitants, therefore, of the small Andean villages through which we passed we constituted a puzzling anachronism. From our clothes and our general bearing, we appeared to be respectable foreigners, but—we were on foot, and driving a burro! No, señores, it could not be; obviously there was something crooked about the business!

Once past the prosperous town of Guaduas, we began the serious business of climbing the huge face of the escarpment, the central cordillera of the Andes. Our third night upon the trail found us camping beneath a thatch for mule-drivers, after having been refused shelter at the near-by inn. All night the rain pattered on the roof, and morning found us waiting for it to clear up, so that we could proceed.

Toward noon we pushed on, and at night made Albán, a town of some size, whence travel by oxcart is possible to Facatativá. Up to this point the road from Honda had been suitable only for pack and saddle animals. With much persuasion, the lady who owned the hotel agreed to take us in, though she was obviously dubious regarding our character and probably expected us to slip out the next morning without paying our bill.

GABRIEL ENJOYS A NEW DIET

Gabriel was holding up well and had thus far shown no aversion to the corn and alfalfa which we had offered him, in spite of the very different diet to which he had been accustomed at Honda. Thompson and I were footsore, but gained new enthusiasm from realizing that we were now within striking distance of the plateau, as evidenced by a noisy party of Bogotá youths who had come down to Albán by auto and were busy celebrating in the *cantina* (barroom) of the hotel.

It was noon the next day when we splashed through the mud into Facatativá and selected the Hotel Gonzales as our headquarters. The trip was over, as far as tramping was concerned, for we decided that little was to be gained by crossing the sabana on foot. We bundled Gabriel into the train, after the manner of true Colombian gentlemen, and with mud-bespattered ruanas climbed aboard.

A CLIMATE TOO NEARLY PERFECT

It was pleasant to be in the capital once more, though the damp, chilly atmosphere made me remember the lowlands with longing.

Perhaps it is vain to think that an ideal climate exists in this world; yet it has always seemed to me that an elevation of 4,000 to 6,000 feet in tropical America brings with it conditions as nearly perfect as one could wish. Indeed, they are almost too much so; for day upon day of balmy sunshine, and night upon night of crisp, clear air, just right for sleeping under two blankets, make one begin to wish for a first-rate thunderstorm, a heat wave, or almost anything else to break the monotony.

My stay in Bogotá was drawing to a close. I got out my maps and studied the route across the central cordillera to the Cauca Valley—that earthly paradise which stands out in my memory as one of the supremely beautiful regions of the world. And then I had the *maestro* make me a new pair of saddlebags and touch up the weak spots in my equipment generally.

One must be foresighted in Latin America, else he will find himself upon the trail, 50 miles from the nearest town of any size, with a broken stirrup leather, worn-out puttees, or something else which sounds inconsequential, but which may cause a vast amount of annoyance before there is an opportunity to make repairs.

The morning of my departure dawned all too soon. Hernando proudly squandered a week's salary in purchasing a ticket to Facatativá and return—*second* class, it is needless to state—so that he might see his *patrón* safely started upon the long journey.

Then for the last time I saw the broad green fields of the sabana fade away into the distance; for the last time I watched my fellow-travelers climb down from the train, mount their horses, and ride away. We crossed the divide, and the brakes commenced to groan as we started down the mountain side. The days spent round about Bogotá were at an end.

FISHING FOR PEARLS IN THE INDIAN OCEAN

By Bella Sidney Woolf

"In the sea of the changeable winds his merchants fished for pearls."—*Cuneiform inscription, Nineveh.*

THE fame of the Ceylon Pearl Banks goes back into the mist of ages. It is recorded that in 600 B. C., Vijaya, who landed in Ceylon in 543 B. C. and became its first king, sent a gift of chanks and pearls to his father-in-law, the King of Madura. Pliny discourses on the value of Ceylon pearls and on their formation, and Ibn Batuta, that shrewd medieval globe-trotter, gained first-hand knowledge of a pearl fishery in the fourteenth century.

From time to time in the long history of the Ceylon Pearl Fishery breaks have occurred. The spat has vanished, the young oysters have been swept away by adverse currents or have been destroyed by rapacious fish.

After one of these intervals, lasting 19 years, a pearl fishery was opened in February, 1925. The scientific operations were in the hands of Dr. Pearson, Marine Biologist to the Government of Ceylon, and Mr. A. H. Malpas, both of whom have devoted many years of study and research to the life history of the pearl oyster.

OFF FOR THE HISTORIC PEARL BANKS

On a Sunday afternoon we set out in the government trawler *Nautilus* from Colombo Harbor, to visit the historic Pearl Banks. As the palm-fringed shore faded away and the trawler went north across a golden pathway of sunshine, one had a pleasurable sense of stepping back into the past; for, though steam trawlers now play their part in the fishery, there is no doubt that the actual procedure of diving and the traditions have not altered one jot or tittle since the days of Vijaya.

The *Nautilus*, commanded by Captain Kerkham, R. N. R., late Superintendent of the Fisheries for the Ceylon Pearl Company, is a very comfortable boat for her size, and, whether sitting on her deck under the awning for meals or sleeping in the airy cabins, there was no hint of hardship or discomfort.

The night was rough, so we turned in early, but were up at 4 o'clock, when the *Nautilus* dropped anchor. It was a starlit night, and out of the darkness there came lights, green and red, moving mysteriously. They were the lights of the trawlers *Lilla* and *Violet*, towing in the fishing fleet.

Slowly the dawn came and revealed the gray throbbing waters of the Gulf of Manaar, with red-and-white flags bobbing up and down at irregular intervals. It looked for all the world like a gathering for a regatta. We were over the famous Twynam Paar, the pearl bank that has recently been located. These rocky "paars," on which the oysters congregate in millions, lie for the most part in five to nine fathoms.

The fishing fleet takes one straight back 3,000 years. In high-prowed *dhoneys* like these, the fishermen set out to sea in the days of King Vijaya, and the rigging and tackle have not changed by a hair's breadth.

The sun flooded the sea and the whole scene took on stir and animation and clamor. The dhoneys had cast off from the trawlers and were being directed into position by the *Nautilus*. Nothing is done in the East without a full accompaniment of noise, and the fishery is no exception.

THE ARAB EXCELS THE TAMIL AS A DIVER

The decks of the dhoneys were packed with brown figures: the *manducks*, who lower the divers, busy with their ropes; the divers themselves clambering over the sides, the other occupants of the boats chattering, pulling at gear, or doing nothing with a maximum of commotion.

It is an entrancing sight—the boats, some painted bright blue or yellow, bobbing up and down on the translucent blue

Photograph by Platé, Ltd.

THE PEARLING FLEET AT ANCHOR

While the average crew of a pearling vessel numbers from 30 to 35 natives, some of the craft carry a complement of 65, about half of whom are actual divers.

Photograph by Walter Pine

DHONEYS SETTING THEIR SAILS

The rigging and tackle of the pearl fishing craft of to-day are the same as in the days of King Vijaya, 3,000 years ago (see text, page 161).

Photograph by Platé, Ltd.

THE FLEET AT DAWN

"Slowly the dawn came and revealed the gray, throbbing waters of the Gulf of Manaar, with red-and-white flags bobbing up and down at irregular intervals. It looked for all the world like a gathering for a regatta" (see text, page 161).

water, the flutter of gay-colored cloths and turbans hung on spars and rigging, the muscular brown bodies shining in the sunshine or gleaming in the water.

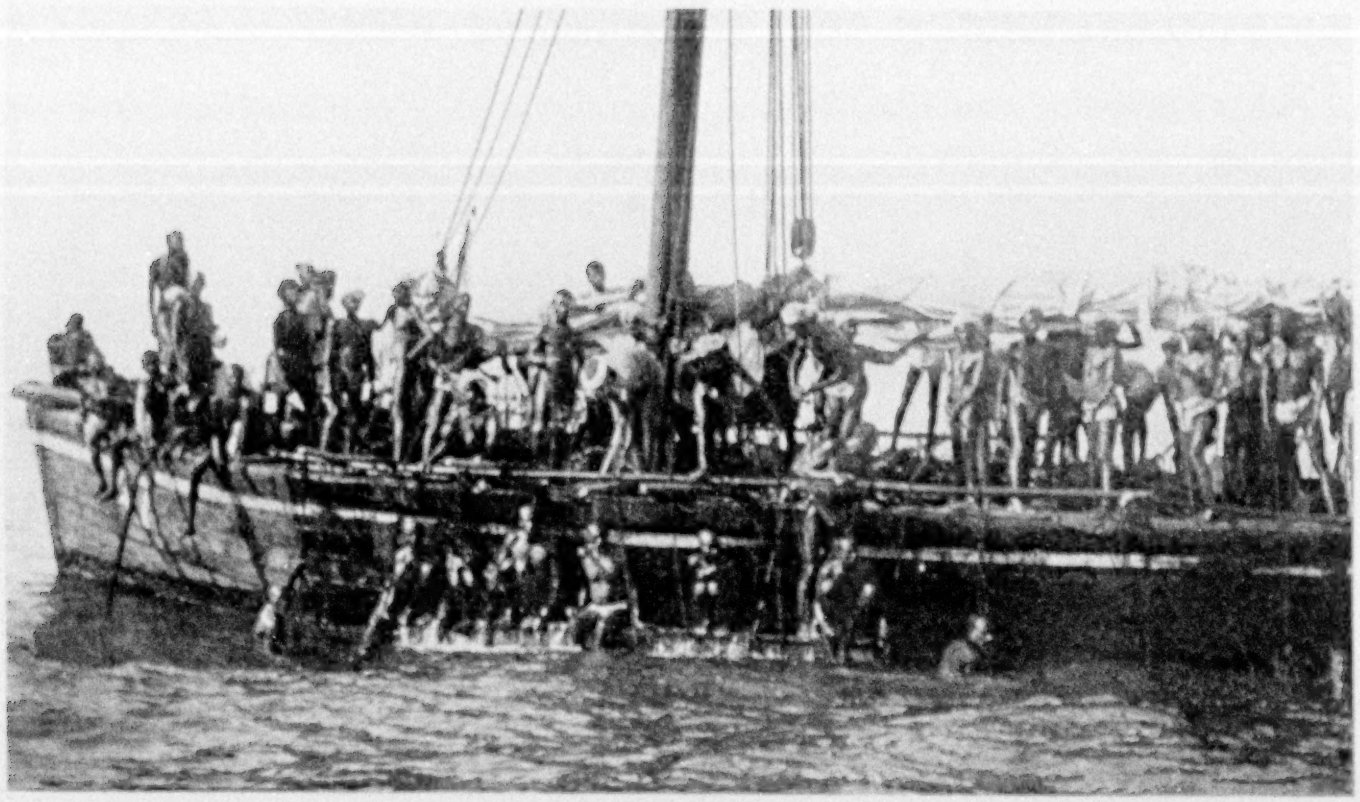
THE ARAB HOLDS HIS NOSE WITH A CLIP, THE TAMIL USES HIS FINGERS

The divers are chiefly Tamils from southern India, and Arabs, the latter being the more efficient. The Tamil makes a terrible ado about it. If he descends and finds few oysters, instead of trying again, he raises his voice to heaven with shouts of "Sippi ille!" (No oysters!) The Arab's motto is, "It's dogged as does it." Without any noise or commotion, he goes down into the depths and works swiftly and perseveringly, bringing in far more oysters than the excitable Tamil.

There is a difference in the methods of the divers, although they both go down in the same way. The manduck controls two ropes. A stone or metal "sinker" is attached to the one, a net basket to the other. The diver descends with one foot on the sinker and the second rope and net bag in his hand. Arrived at sea bottom, he gathers the oysters and throws them into the bag; then he pulls at the rope and the manduck hauls him up to the surface.

The Tamil does not hold the rope till he reaches the surface; he begins to swim. The Arab comes up to the surface holding the rope, and in this way saves time. The Arab puts on a nose-clip; the Tamil holds his nose with finger and thumb.

The effect of an Arab diver rising to the surface is very strikingly shown in the illustration on page 170. The man



Photograph by Andrée

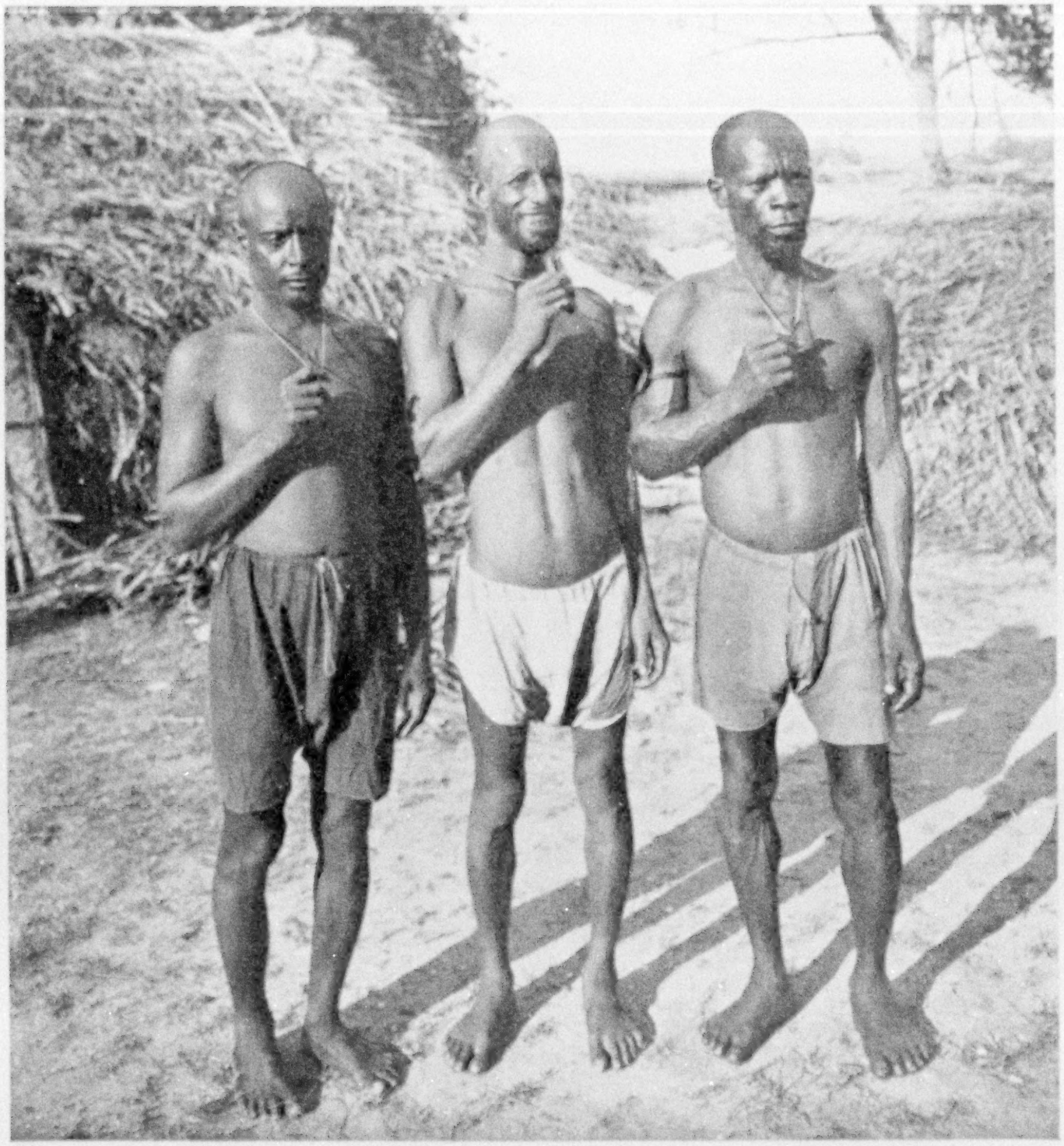
KILAKARAI DIVERS

Unlike the large, thick-shelled oysters of the South Seas, Australia, the Philippines, and Burma, which produce the mother-of-pearl of commerce, the Ceylon pearl oysters are small, the maximum size being four inches, and the shells are so thin that they may be crushed between the fingers of an average man.

Photograph by Platé, Ltd.

NOT WORN FOR ADORNMENT

The Arab wears a nose-clip when diving, the Tamil holds his nose with finger and thumb (see text, page 164).



Photograph by Platé, Ltd.

HOLDING THEIR NOSE-CLIPS

The average time under water for the Arab diver is from 60 to 70 seconds, and the normal maximum does not exceed 90 seconds. The Tamil and Moormen average from 35 to 50 seconds. There is a well-authenticated case of an Arab who remained in water seven fathoms deep for 109 seconds. Many preposterous stories of long periods under water have been given credence, and the more ancient the account the longer the time credited. One author in 1803 declared that the average time for divers to remain submerged "does not much exceed two minutes, yet there are instances where they have remained under water four or even five minutes." A writer of 1798 recorded that he saw a diver remain under seven minutes, and a Dutch anatomist of 1672 wrote that he observed divers who worked under water for half an hour! A 14th century author declared that "some remain down an hour, others two hours, others less."

looks like a brown frog, as he comes up through the water.

As one watches the divers at work, one is reminded of Browning's lines from "Paracelsus":

Are there not . . . dear Michal,
Two points in the adventure of a diver,
One—when, a beggar, he prepares to plunge,
One—when, a prince, he rises with his pearl?

The average time that a diver stays under water is between 60 and 70 seconds, but cases are known in which he has remained below for nearly two minutes.

The divers work in pairs, and their

Photograph by Platé, Ltd.

TYPES OF MEN WHO GO DOWN IN THE SEA FOR PEARLS

Four distinct racial types are represented among the Ceylon pearl divers: the Tamils, most of whom come from the coast of the Madras Presidency, India; Moormen, drafted from the villages of the Madura coast; Malays from the Malabar coast, and Arabs from Ceylon's capital, Colombo, and from Jaffna.

shells are packed into bags on the decks of the dhoneys. It is fascinating to watch the muscular brown figures at work in the water, and the manducks outlined against the sky pulling at the ropes.

The Arab divers haul themselves out of the water onto the decks of the dhoneys with superb ease, even after making so many descents that one would imagine they were exhausted. The muscles stand out on their shining brown bodies and the skin gleams like polished bronze.

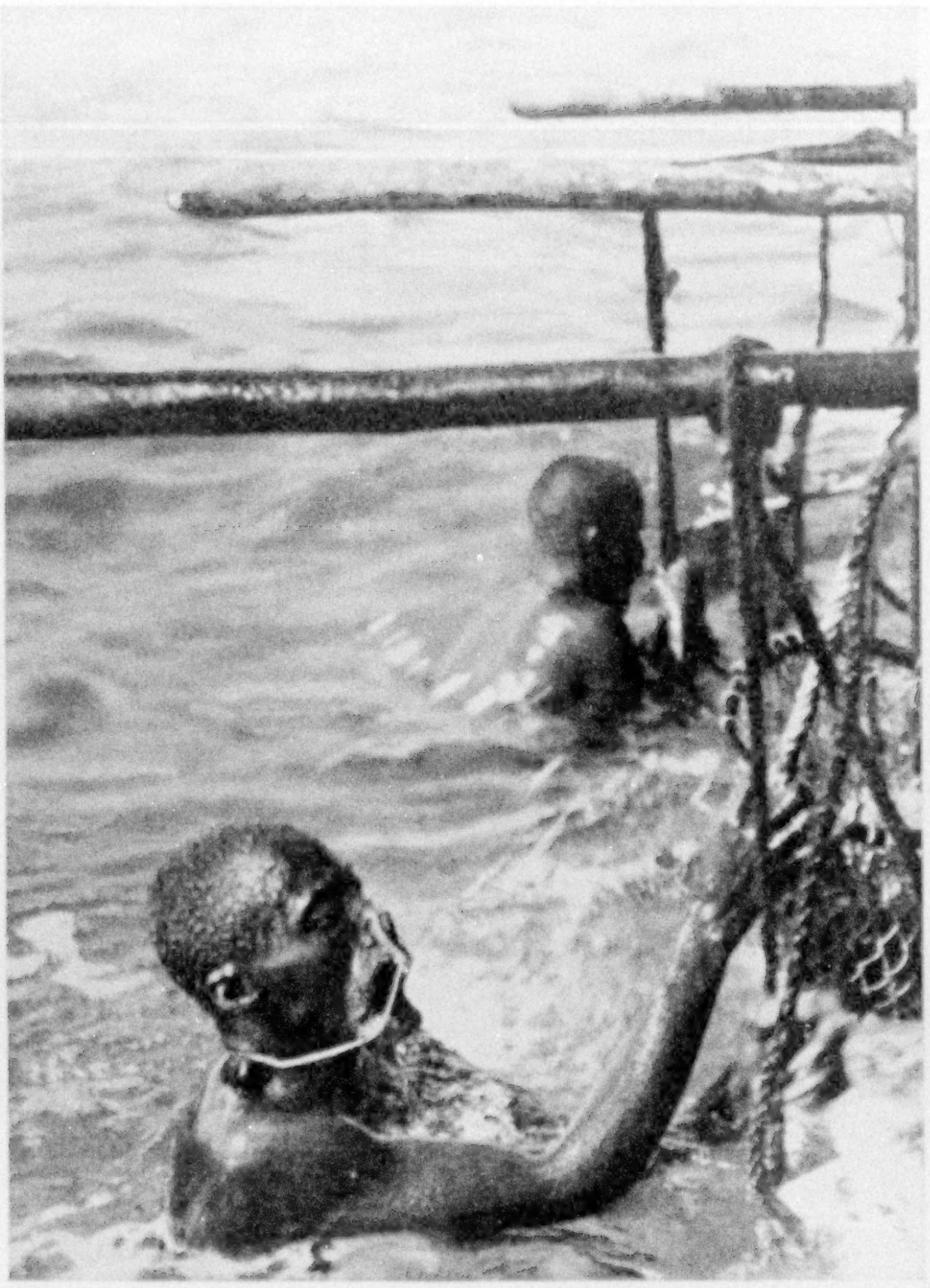
One man I remember above all, a magnificent figure, towering above the rest, with a scrap of cotton loin cloth as his only apparel, save a large key which hung on a cord round his waist. There was something ludicrous in the key, attached to someone so devoid of any apparent possessions. Then I pictured him leaving his little home, say at Basra, locking the front door, casting a longing look at his date palms and girding on his latch key. Let us hope he returned with many pearls, or the proceeds of them, and the key.

THE SHARK-CHARMER HAS LOST HIS JOB

In some cases the divers discharge water and even blood from their mouth, ears, and nostrils; but, watching them close at hand, I did not detect any of these distressing symptoms. The men seemed perfectly comfortable and, in the case of the Arabs, thoroughly contented. A good diver can make 40 or 50 descents in a day.

It is astonishing that they are not attacked by sharks, but no case of such an attack occurred during the fishery. In old days the service of a shark-charmer was employed, but this superstition seems to have "gone west." Many Arabs have a verse of the Koran tied round the arm, neck, or wrist as a protection from sharks.

At noon the "hooter" sounds and div-



Photograph by Walter Pine

UP FOR AIR

Note the clip worn over the nose; the basket in which the pearl-oysters are brought to the surface is seen at the right.

ing ceases for the day. The government sealing officer sets out in his launch and goes from one boat to the other, putting the government seal on the bags. When this useful precautionary work is accomplished, the dhoneys collect round the tugs, set their sails, and are attached to the tugs by towlines (see page 172).

A more beautiful sight than the dhoneys following after the tugs cannot be imagined, their huge brown-and-white sails shining in the sunshine, flapping like the wings of great birds, and a curling, sparkling wave breaking from their bows.

In the old days, of course, the fleet made for Pearl Town under its own sail and took many long hours to accomplish the journey. This towing of the fleet is one of the few innovations introduced into the age-old procedure of the fishery.

PEARL TOWN A MUSHROOM CITY

It is intensely interesting to watch the crowded decks of the dhoneys from the stern of the trawler. The Arabs, after the day's work, wrap themselves in their burnooses, some of them grimy white, others blue and yellow. They herd round the fire lit in the dhoney, stretch themselves out, and sleep till the boats approach Pearl Town.

Then there is bustle and stir on board. About half a mile from shore the dhoneys cast off from the tugs, and a race for the shore takes place. It is a case of "first come, first served," and every diver is anxious to be the first to get his oysters into the government *kottu*, the inclosure in which the oysters are counted and divided.

Meanwhile we in the trawler transship to a launch and hurry shoreward, in order to see the arrival of the boats (see page 174).

Marichchukaddi, Pearl Town, seen from the sea, is a most attractive spot—a low, reddish coast line, tree- and turf-covered, with a background of jungle, stretching away to a game sanctuary.

The shore is crowded with people, in colored cloths and turbans. It is astonishing to think that when there is no pearl fishery Marichchukaddi is deserted, save for a few native huts. Now a town of

Photograph by Walter Pine

READY FOR THE PLUNGE

The diver employs a smooth, flat stone to aid him in his descent. When ready to dive, he places one foot in a sort of stirrup on the stone, grasps the edge of a rope basket attached to another rope (see illustration, page 168), inflates his lungs, loosens the slipknot holding the stone, and sinks rapidly to the bottom, where he disengages his foot and begins scrambling about, gathering the oysters and putting them in the basket.

Photograph by Platé, Ltd.

A PEARLING CREW AT WORK

While most of the waters surrounding Ceylon produce pearls, the most important fishery is in the Gulf of Manaar, an indentation between the island and the southern apex of the India peninsula. Note the flat stone in its rope stirrup (left foreground), which the diver uses to aid him in his descent (see, also, page 169).

Photograph by Pläté, Ltd.

SEALING THE OYSTER BAGS BEFORE THE DHONEYS REACH SHORE

Before the government began sealing the bags, the leisure of the trip from the fishing grounds to the shore, requiring from two to four hours, was employed by the natives in opening the oysters and concealing any pearls which they might find. It is estimated that at times this illicit practice cost the government fully one-fourth of the catch.

30,000 to 40,000 inhabitants has sprung up, as if by magic. A day or two after the closing of the fishery these inhabitants of Pearl Town melt away like the figment of a dream. Only the *cadjan* (palm-leaf) huts and a few substantial buildings remain. The shore is deserted and silence reigns where for weeks rose a babel of many tongues, while Pearl Town enjoyed her crowded hour of glorious life.

THE GOVERNMENT TAKES TWO-THIRDS AND ALLOWS DIVERS ONE-THIRD

It is delightful to watch the dhoneys making for the shore like a flock of birds on brown-and-white translucent wings, skimming over the shining waters. The moment the boats are beached the divers leap ashore, seize their bags and carry them up the beach on their heads. Each looks like the slave, in the story of Aladdin, bearing treasure, and so indeed they do in some cases (see page 176).

The bags are dumped in the kottu, a huge palisaded inclosure, with a numbered place set aside for bags from each correspondingly numbered boat. The shells are counted by government officials and made up into bags of 1,000 each. The government's share is two-thirds, the diver keeps one-third.

The bustle and hustle and clamor in the kottus can be imagined when it is realized that at one point of the fishery 125 boats were out and 1,908 divers had to pass through the inclosure. All was conducted

Photograph by Plāté, Ltd.

THE PEARL FLEET IN TOW

Formerly, of course, the fleet returned to Pearl Town from the *paars*, or pearl banks, under their own sail. Towing is one of the few innovations introduced into the pearl fishery.

Photograph by Platé, Ltd.

HOMEWARD BOUND AT SUNSET

"It is delightful to watch the dhoneys making for the shore, like a flock of birds on brown-and-white translucent wings, skimming over the shining waters" (see text, page 171).

Photograph by Plâté, Ltd.

THE RACE FOR SHORE

The sooner his dhoney reaches the shore, the more quickly the diver gets his third of the oysters and the sooner he is able to sell his shells to the retail buyers waiting outside the kottu. Having disposed of his catch, the diver spends the remainder of the day in eating, resting, and bathing.

in a very systematic manner, however, the divers coming in at one entrance and leaving by another, bearing their share of the catch, which they carried off to an open market, held in a pleasant, green, tree-encircled hollow.

PEARL BUYERS OF EVERY NATIONALITY SWARM ABOUT LIKE BEES

A crowd of buyers of every nationality and age swarms round the divers like bees, chattering and bargaining. The divers sell in small quantities. At the beginning of the 1925 fishery they obtained as much as a rupee a shell.

The purchasers thrust their shells into palm-leaf bags, which form one of the staple articles of sale in Pearl Town shops and hurry off to open their treasures. It is a unique sight to watch single figures or groups of two or three seated, knife in hand, searching for pearls and absolutely absorbed in the hunt (see page 180).

Finding the pearls is a tricky business, for they are often deeply embedded in the flesh of the oyster. The expert first passes his finger round the rim of the shell, then presses back the flesh with his knife (see illustration, page 182) and conducts a systematic search through the soft flesh. In one small oyster eleven small pearls were found.

In some cases the pearl is not detached, but is formed on the shell, when it is known as a "blister pearl." If it is well raised above the shell, it can be cut out and set in a ring or brooch, where perfect roundness is not required, as for a necklace.

When the divers have sold all their oysters, they seek the Divers' Bathing Pool and wash the salt from their weary limbs. A continuous flow of talk, in which the word *sippi* (oyster) occurs incessantly, shows that they are living over again the day's adventures.

THE SIGHTS OF PEARL TOWN

Pearl Town itself provides a fund of entertainment. There are long streets of cadjan huts, in which every variety of article is displayed for sale—clothes, umbrellas, bead necklaces, foodstuffs, and household utensils in profusion. There is a hospital, a police station, a post office, and a courthouse.

There are very elaborate sanitary arrangements and precautions in order to prevent any outbreak of the dread epidemics—cholera and plague.

The pearl dealers, grave, bearded men who have come from long distances in India, sit in a row of huts, with their brass sieves for grading the pearls and their huge brass-bound chests (see page 183). Under a tulip tree sit the pearl drillers, who perform the delicate operation of piercing the gems (see page 179).

One can wander for hours through Diver Street, Old and New Moor Street, Tank Street, and Chetty Street, or study the family camps in the open under the trees, peering into the cadjan huts, where mysterious cooking operations are in progress, examining the accommodations at the Rest House, where primitive lodging can be obtained.

Queer incidents occur. At one point, as we passed along a path through a grassy field, a small boy rushed out from a group sitting under some trees and, thrusting a tin at us, said in a shrill voice:

"Will you not want a pineapple tinned in this country?" We declined the offer, but admired the business enterprise.

AUCTION OF OYSTERS IS CONDUCTED IN THREE LANGUAGES

From one tree hung at least 20 umbrellas, looking like strange birds with folded wings. The man in charge explained that the umbrellas were left in his safe-keeping while the owners were at work—a primitive form of cloakroom.

Toward evening Pearl Town looks its best, especially if one strolls out to the edge of the jungle and hears the call of birds in the pink light of a glowing sunset.

At 9 o'clock every evening the government auction of oysters was held by Mr. F. J. Smith, government agent of the Northern Province, to whom the running of the pearl fisheries and Pearl Town was entrusted.

The auction took place in the courthouse. Rembrandt would have painted this scene joyfully—the upturned dusky faces of the buyers, who squatted on the floor in serried rows; the gorgeous colors of cloth and turban half revealed by the light of a lamp from the dais on which the government agent sat.

Photograph by Andrée

UNLOADING THE PEARL OYSTERS

Upon reaching the shore, every diver tries to be the first to get his oysters to the kottu, the government inclosure where the shells are divided.

Photograph by Flåté, Ltd.

CARRYING IN THE BAGS

The divers count their catch into three equal piles of oysters, and the government agent then selects the pile that shall go to the crew.

INSIDE THE KOTTU

In this bamboo inclosure are many numbered booths, and into these the crews carry their shells, each to the booth corresponding to the number of his boat.

Photographs by Plâté, Ltd.

REMOVING OYSTERS FROM THE KOTTU

The divers are immediately surrounded by natives anxious to buy in small quantities. The government's share of shells (two-thirds) is auctioned off in the evening in lots of 1,000.

Photograph by Platé, Ltd.

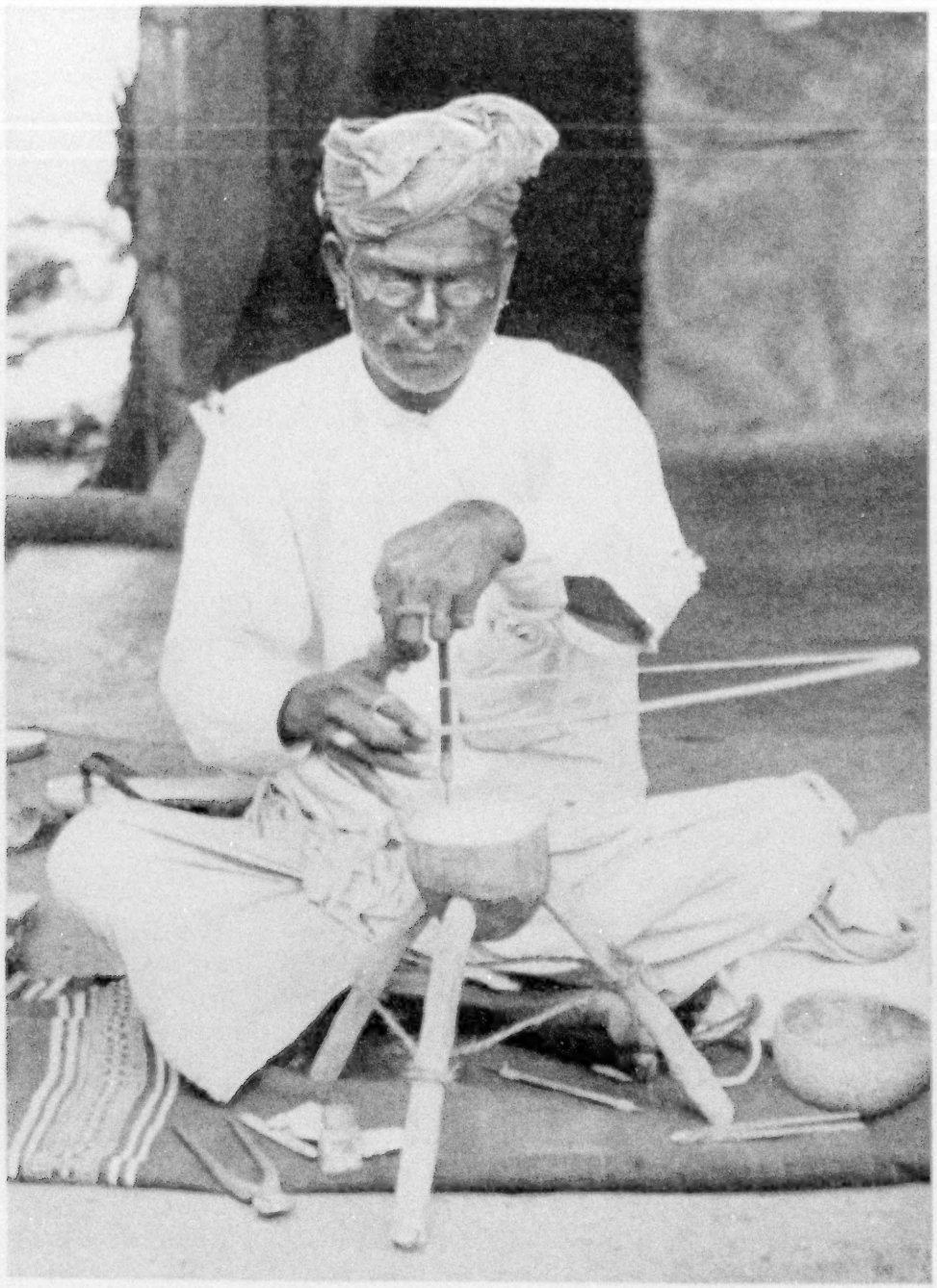
A KING'S RANSOM IN THE HOLLOW OF HIS HAND

The perfectly spherical pearls range in weight from a small fraction of a grain to 300 grains or more, but it is very, very rare that one of choice luster weighs more than 100 grains. The largest of which we have any specific information was that among the French crown jewels as early as the time of Napoleon, an egg-shaped pearl weighing 337 grains. . . . The very large ones, weighing in excess of 100 grains, are called "paragons." The small pearls, weighing less than half a grain each, are known as "seed pearls." The very small ones, weighing less than 1/25 of a grain, are called "dust pearls."—*The Book of the Pearl*, by George Frederick Kunz and Charles Hugh Stevenson.

The bidding was conducted in Tamil, Singhalese, and Arabic by means of interpreters. Oysters were sold in lots of not less than 1,000.

The highest price paid per thousand was Rs. 110/–; the highest average price per day was Rs. 74/–; the average for the whole fishery was Rs. 45/– per thousand; the total revenue to government, Rs. 514,326.00. (The normal value of the rupee is about 48½ cents.)

The purchasers of large quantities of oysters remove the shells to *totties*, inclosures which contain the oysters until they rot. Millions of maggots eventually consume the flesh. The residue is examined, sieved, and sifted innumerable times, and even the dust is picked over, so that the tiniest seed pearl may not escape.



Photograph by Platé, Ltd.

THE PEARL-DRILLER

The pearl fakirs of Pearl Town sit about the streets before small three-legged wooden work tables. With this primitive bow-drill a clever workman can pierce 40 to 50 pearls a day. There is in existence in America a necklace of 120,000 seed pearls made in this way.

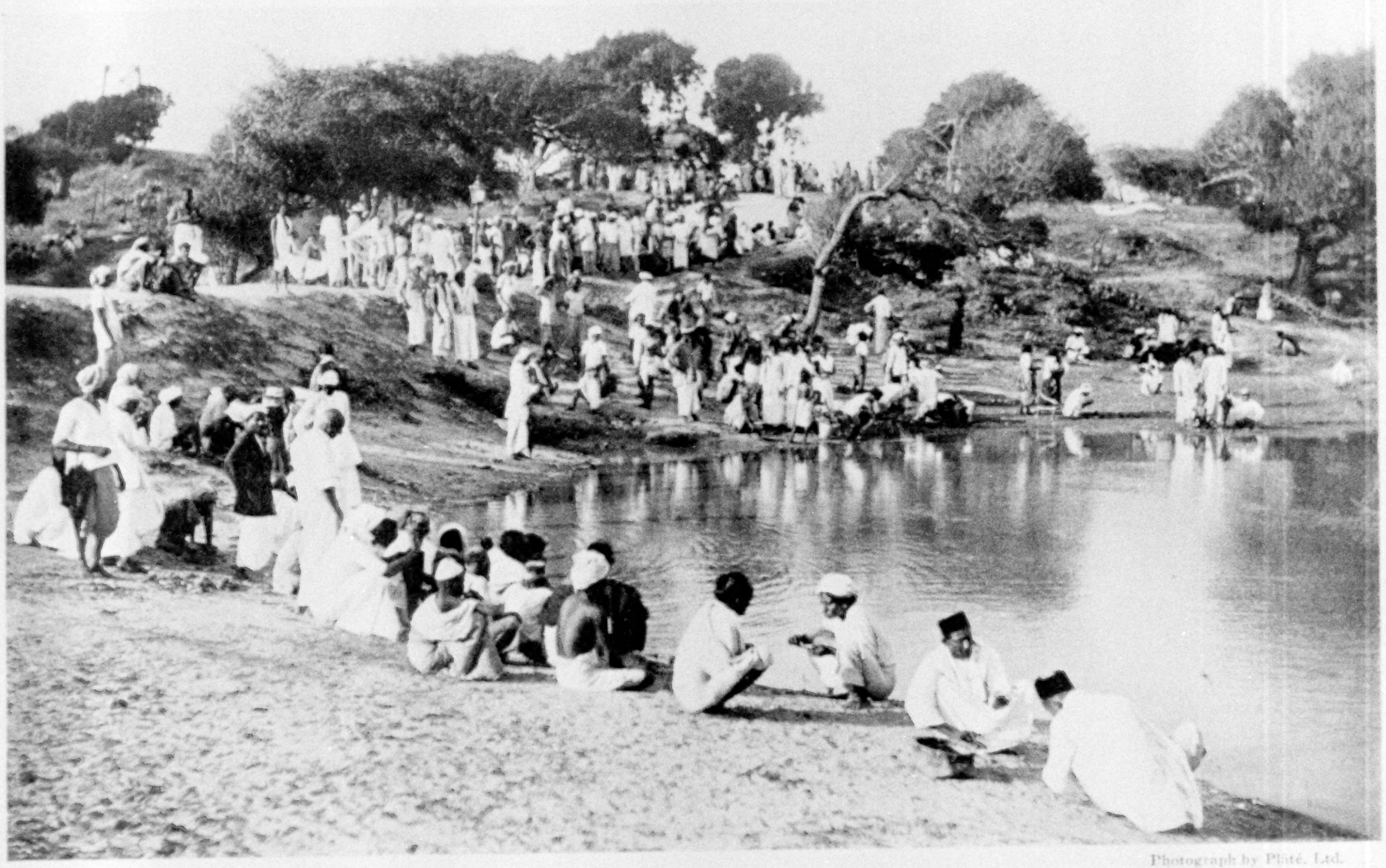
"He was a bold man that first ate an oyster," says Colonel Atwit in Swift's "Polite Conversation." One might add that he is a bolder man who braves the perfume of decaying oysters and seeks for pearls. But the glorious uncertainty of the gamble leads him on, and there are few thrills equal to that of finding "one pearl of great price."

The following interesting notes on the formation of the pearl are contributed by Dr. Pearson, the Ceylon Government's Marine Biologist:

"The mystery of pearl production has been the subject of much speculation throughout historic times. The formation of the pearl was variously ascribed by the ancients to the consolidation of drops of dew, to the distillation of the tears of the Nereids, or yet again to the effect of a flash of lightning.

"Leaving aside these more fanciful views, the most reasonable theory ascribes the creation of a pearl to the intrusion into the tissues of the oyster of some foreign particle, such as a sand grain, or parasitic worm, or indeed any suitable irritant. The problem still awaits definite solution, however, though there would appear to be considerable support for the parasite theory.

"The pearl oyster has its soft parts covered by a skin, which has the faculty



Photograph by Platé, Ltd.

SEARCHING FOR THE PRIZE

Retail purchasers of oysters are seen feverishly examining their shells.

Photograph by Plâté, Ltd.

WASHING THE OYSTER SHELLS

To expedite the process of rotting, so that the pearls may be more easily extracted, the oysters are piled into dugout canoes and covered with matting. At the end of from seven to ten days little is left except pearls, shells, and slime. The canoe is now flooded to the brim and the naked natives, ranging on either side, remove the shells and begin rinsing and kneading the refuse in which the pearls are imbedded.

Photograph by Platé, Ltd.

THE SEEKERS

It is extremely difficult either to see or to feel a pearl in a perfectly fresh oyster. It is the practice, therefore, to allow decomposition of the soft part to set in before the search begins, with the result that the task is excessively odoriferous (see text, page 179).

of producing the nacre, or mother-of-pearl, with which the inside of the shell is lined. On occasion foreign particles find their way between the soft parts and the shell.

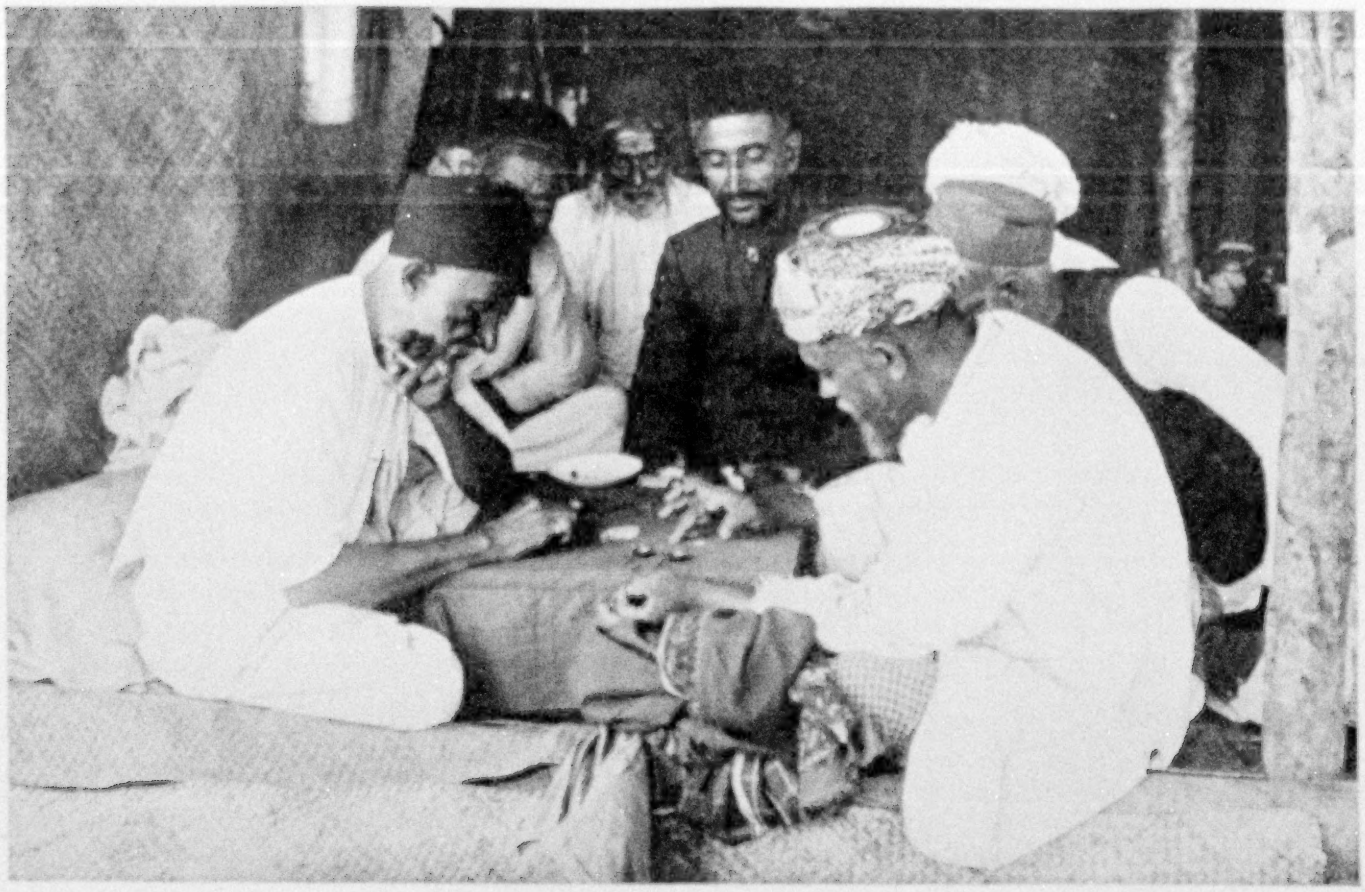
"Thus a secretion of nacre is stimulated around the intruding particle and a blister pearl is formed, which remains attached to the mother-of-pearl lining of the shell. Or, again, a young parasite may bore its way through the skin, carrying with it a few of the nacre-forming cells, which will proliferate and envelop the parasite.

"So the unfortunate parasite becomes inclosed in a nacreous tomb and forms the nucleus of a beautiful pearl. As a French scientist has put it, 'La plus belle perle n'est donc, en définitive, que le brillant sarcophage d'un ver.'" (The most beautiful pearl is in reality only the brilliant sarcophagus of a worm.)*

THE PORTUGUESE MADE FIRST DETAILED RECORD OF CEYLON PEARL FISHERIES

It is not until we reach the Portuguese occupation of Ceylon (1517-1658) that we find any detailed account of the manner in which a pearl fishery of those days was conducted, although fragmentary references to earlier fisheries are frequent, and from these it would appear that the general methods for the conduct of a fishery have remained substantially un-

* See, also, in the NATIONAL GEOGRAPHIC MAGAZINE, "The Pearl Fisheries of Ceylon," by Hugh M. Smith, February, 1912, and "The Cultivation of Marine and Fresh Water Animals in Japan," by K. Mitsukuri, Ph. D., September, 1906.



Photograph by Plâté, Ltd.

PEARL MERCHANTS OF PEARL TOWN (MARICHCHUKADDI)

altered during the last 2,000 to 3,000 years, according to Mr. A. H. Malpas.

During the Portuguese period, Manaar was the center of the pearl-fishing industry, but it had lost much of its prosperity when the Dutch captured it in 1658 and succeeded to the pearl fisheries.

The Dutch held a number of profitable fisheries before they lost Ceylon to the British in 1796.

THE PEARL OYSTER IS NOT A TRUE OYSTER

The pearl oyster (*Margaritifera vulgaris*) is not a true oyster, but belongs to the mussel family. It somewhat resembles the scallop in shape, although the two halves of the shell are almost equal in size and they have not the characteristic corrugations of the scallop.

Like the marine mussel, the pearl oyster possesses a byssus, or bundle of tough horny threads, which it has the power of casting off and renewing at will. By means of this byssus it anchors itself to rocks or other suitable objects.

There are two spawning seasons a year, coincident with the periods of the northeast and southwest monsoons, when millions of young oysters are liberated. Thus each year sees two spatfalls, or deposits, of young oysters.

The first few days of the young oyster's life, immediately after it is hatched from the egg, are spent as a free swimming larva in the surface waters of the sea, until such time as the shell is formed, when the oyster sinks to the bottom and attaches itself by means of its byssus either to other oysters or to any existing anchorage. Should the young oyster fall on sand, it does not generally survive a long period. Only those oysters falling on rock reach a fishable age.

The pearl fishery of 1925 lasted for 37 days, but, owing to adverse weather, the catch was small—a total of 16,000,000 oysters.

When one realizes the quantities of oysters, one is ready to exclaim with Joseph Hall, Bishop of Exeter (1574-1656):

> "There is many a fine pearl laid up in
> the bosom of the sea,
> That never was seen nor never shall be."

Or one may philosophize with wise Sir Thomas Browne, Hall's contemporary:

"To enjoy true happiness, we must travel into a very far country, and even out of ourselves, for the Pearl we seek for is to be found not in the *Indian*, but in the *Empyrean* Ocean."

ROTHENBURG, THE CITY TIME FORGOT

By Charles W. Beck, Jr.

With Illustrations from Natural Color Photographs by Hans Hildenbrand

THE traveler in Germany who, at Whitsuntide, is within reach of Rothenburg ob-der-Tauber should set aside all other plans and visit this perfect medieval walled town to witness a unique festival, so picturesque and so pleasantly diverting as to have no equal in continental Europe. On this occasion the city does honor to the man who took the biggest drink in all history, bar none! Thereby he saved the lives of Rothenburg's town council and obtained mercy for his fellow citizens.

This is the story:

During the Thirty Years' War Rothenburg felt secure behind her great wall, with her towers well placed for defense; with her wide, and at that time very wet, moat; with her citizenry trained to arms and loving nothing better than a good fight, and with a garrison of professional soldiers, a Swedish force sent to help the Rothenburgers against the enemy. But the city was besieged by no less a general than Tilly himself, who brought up his whole army of 40,000 and swore to capture the town and deal with it as he had already dealt with hapless Magdeburg.

ROTHENBURGERS REFUSE TO SURRENDER

Tilly's cannon battered at the walls, and the light artillery of the city's towers was powerless to silence the heavier guns of the besiegers; but whenever a breach was made and Tilly's soldiers attacked, in hand-to-hand fighting they were beaten off by the intrepid townsmen.

Tilly warned the city that capture was inevitable, and that the only salvation of the citizens lay in surrender; but they would none of it. At last one of the assailants' cannon, by a lucky shot, exploded the Rothenburg powder magazine. Even then the doughty burghers refused to surrender, but with dauntless courage continued the hand-to-hand fighting. It was left to the garrison of mercenaries to hang out the white flag.

Tilly was so enraged at the prolonged resistance of the town that, after he had taken possession of it and allowed the surrendering Swedes to march out in safety, he summoned the members of the town council and informed them that they were all to be hanged. But, moved by the pleas of their wives and daughters, the conqueror at length mitigated this sentence and announced that he would hang only four. He gave the council permission to cast lots to see who of their number should die.

Whereupon the undismayed council stood up and refused the marshal's "mercy," saying they would all live or they would all die, but there would be no lot-casting among them at Tilly's bidding.

At this point in the proceedings a diversion was created by the appearance of the town Pokal, the state beaker, a huge three-quart glass, filled with the town's best wine. Tilly and his seven aides drank and drank again. The Pokal went around twice and still it was not empty. After all, three quarts is no mean measure.

Perhaps the wine softened Tilly's heart! At all events, he cast a grimly humorous eye over the council and swore that if there were any man among them who could empty the famous Pokal at one draft the council would be spared and mercy would be shown to the citizenry.

The proposal did not seem to offer much of a chance to the staunch patriots, even though the Rothenburgers were supposed to be as good drinkers as fighters; but at last one brave soul, ex-Burgomaster George Nusch, said he would make a try, and intimated that if he failed he'd just as soon be hanged drunk as sober.

BURGOMASTER NUSCH SAVES THE CITY WITH A GIGANTIC QUAFF

The keeper of the town cellar refilled the beaker, and George Nusch lifted it—and drank—and drank—and drank—and drank. Imagine with what anxiety he was watched by his fellow councilors, and with what amazement by Tilly and his men!

© Natural Color Photograph by Hans Hildenbrand

IN THE SHADOW OF THE GALLOWS TOWER

Each year at Whitsuntide, when Rothenburg, Bavaria, is decked with the pink and white of blossoming trees and the mauve of lilacs, the townsfolk enact the pageant of the "Meistertrunk" in memory of the famous drink that saved the city from destruction at the hands of Tilly's victorious army in the 17th Century. The way to the medieval city's gallows led through this tower gate and accounts for its name.

©

Natural Color Photograph by Hans Hildenbrand

A PARTING OF THE WAYS: THE PLÖNLEIN, ROTHENBURG

The road to the left leads through the Siebers Tower to a bastion in the city wall; the road to the right through the Kobollzeller Tower to the valley of the Tauber. The interesting old house between the roads is typical of Rothenburg, which remains to-day much as it was two centuries before Columbus reached America, its gabled roofs, dark cloisters, well-preserved walls and ancient watchtowers still breathing forth the atmosphere of the Middle Ages.

©

Natural Color Photograph by Hans Hildenbrand

A BASTION NEAR THE KOBOLLZELLER TOWER

In the background to the left may be seen the castle of the ancient military order of the Johanniter, or Knights of St. John. On the bastion, shepherds and shepherdesses are performing a measure of the historical Shepherd Dance, which is still one of the features of Rothenburg's Whitsuntide celebration.

Natural Color Photograph by Hans Hildenbrand

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ROTHENBURG CITIZENS RE-ENACTING, AT ONE OF THE CITY GATES, A SCENE DURING THE SIEGE IN 1631

During the Thirty Years' War Rothenburg was invested by the Imperial army under Marshal Tilly. The citizens walled up their gates and believed they could hold the city until the Swedish army, under the great Gustavus Adolphus, should come to raise the siege. However, a powder magazine blew up, making a great breach in the wall through which the besiegers poured into the city.

© Natural Color Photograph by Hans Hildenbrand

MARSHAL TILLY AND HIS SOLDIERS AS PORTRAYED IN THE "MEISTERTRUNK" PAGEANT

When the ruthless Tilly entered Rothenburg after its protracted and heroic resistance he announced his intention to execute all the members of the Town Council but, somewhat mollified by the good Tauber wine, he finally agreed to spare all the members if any one of them could empty, at a single draught, the Pokal, a huge loving cup that held three quarts of wine.

Natural Color Photograph by Hans Hildenbrand

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AFTER THE CAPTURE OF THE CITY

Burgomaster Nusch achieved the almost impossible feat of draining the Pokal at a draught, and not only were the councilmen saved but Rothenburg was spared the sack that often followed the capture of a city in medieval days. The free-lancers of the victorious Imperial army celebrated their victory outside the walls, and each Whitsuntide participants in the city pageant commemorate the occasion in this same way.

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Natural Color Photograph by Hans Hildenbrand

MARSHAL TILLY INSPECTS HIS TROOPS IN CAMP

The players in the "Meistertrunk," wearing the costumes of three centuries ago, and re-enacting the events on historic ground, make this pageant seem very real. The modern Marshal Tilly is seen with baton in hand. At his side, in armor, is his ally and lieutenant, Count Pappenheim, called the Iron Rider.

© Natural Color Photograph by Hans Hildenbrand

THE HOFBRONNEN, OR COURT WELL

This was one of Rothenburg's principal sources of water during its historic siege and is located in the courtyard behind the old Rathaus or Town Hall. One of the free-lance soldiers of the Imperial army is flirting with two of the Rothenburg girls, who have come to draw water. On the left is the keeper of the city wine cellar, who is about to intrude on the party.

Good old George Nusch did not overestimate his capacity. One quart, two quarts, two quarts and a half, three quarts—down it went to the very last drop! And with the last drop Nusch fell senseless at the feet of the conquering general, while a cheer went up from those he had saved from the hangman's noose.

It is gratifying to relate that Nusch came to presently and suffered no ill effects from his draft.

ROTHENBURG STILL REMAINS A MEDIEVAL CITY

Tilly was as good as his word—nearly. He spared the Rothenburgers' lives, but he made them pay him heavily in cash for his leniency, and he turned the town over to his soldiers for a week of looting and pillage. But George Nusch had won a place in history and in the hearts of his countrymen that well deserves the annual Whitsuntide party the city stages for him.

This is the pageant of Whitsuntide which the tourist must not miss. Each year some thousand or more of the town's inhabitants don the costumes of 1631 and reënact the whole drama of the siege, the capture, and the emptying of the Pokal—with the exception that the George Nusch of to-day doesn't have to drink the whole three quarts. It is all done with superb accuracy of detail, with spirit, gusto, and rare histrionic power.

It would not be possible, of course, to give this drama as it is given, were not Rothenburg itself still very much as it was in medieval times. To be sure, the moat has been drained, save for a pond or two, and peaceful gardens and orchards grow where once its turbid waters flowed. But the wall is still there, repaired and complete, and the very towers where once the arquebuses fired futilely at Tilly's men at arms.

Moreover, the townsmen of Rothenburg, with splendid appreciation of their native place, have refused to let any modern innovations creep into the architecture or the city's streets. When a house or a highway within the walls needs repair, it is done in a way to preserve its ancient appearance. Rothenburg to-day looks as it must have looked long before Columbus discovered America. Indeed, parts of the city date from two centuries before that time.

This fascinating town is the sort of place to drive an artist mad, since every corner, every shop, every tiny red-tiled house, is a picture. As for the Rathaus, with its beautiful Renaissance doorway in the inner court, the Jakobskirche, the Franciscan church, the Burgturm, the romantic Topplerschlösschen, and the small Gothic Kobollzeller Church, built in 1472, with its amusing double spiral staircase, which two persons can ascend at once without seeing each other—all of these can be, have been, and will be painted again and again, for the delight of all those who find pleasure in medieval beauty.

Indeed, strolls about Rothenburg in summer are rather complicated by the number of easels and tripods that clutter the streets, each with a hard-working artist attached.

Most tourists go first, and rightly, to see the Rathaus, though not all of them climb its 193 steps to the top of the tower. Those who do so, however, are well rewarded by the view of the town and environs, the valley of the Tauber, and the river itself—a silver ribbon tied around the green.

The older part of the Rathaus was built in 1240, while the newest part dates from the Renaissance, 1572, and later, and is notable for its balcony, oriel windows, portico, and the aforesaid staircase tower. The largest room in the Rathaus is called the Kaiser-Saal, and here is given the last scene of the Whitsuntide play, that in which Nusch drains the flagon.

TORTURE CHAMBERS WERE THE LAST WORD IN HORROR

Below the Rathaus are torture chambers and dungeons, without which no medieval town hall would be complete. The Rothenburgers did nothing by halves; so their dungeons and torture chambers are the last word in horror even now, though the rack and the Iron Maiden have been removed. Criminals were executed here by the sword as recently as 1804, in which year Bavaria stepped in and revoked the city's rights to deal out such bloody punishments.

The civic pride of the old-time Rothenburgers was a splendid thing. They dug down into their pockets and built the Rathaus just after a war tax of 80,000 guldens had been levied on the town. They built the Jakobskirche, a high and handsome basilica, which, when completed, elicited from a great ecclesiastical dignitary the inquiry as to who had endowed so noble an edifice. The reputed answer sounds very characteristic: "It has been built and bettered from gift and counsel and help and alms of our own burghers, as the custom is in the land."

Perhaps the Jakobskirche's greatest claim to distinction, however, is not its imposing appearance and fine decoration, but the fact that it was built on the site of a pilgrimage chapel from which it inherited its sacred relic, a crystal vial reputed to contain drops of the blood of Christ. Those interested in architecture and not in relics will examine the church's three-aisled nave, which is supported by 12 clustered columns of unusual beauty in decoration and arrangement.

Historically, the high spot of the church's history occurred in March, 1525, when Florian Geyer read the articles of association of the Peasant League to the burghers assembled to hear him, and invited—perhaps incited—them to join in the Franconian Peasant War.

CITY'S GREATEST BENEFACTOR A VICTIM OF POISON

In one of the chapels inside this church is the tomb of Heinrich Toppler, an even greater hero in Rothenburg than Nusch. He was a burgomaster of the earlier days, for he died in 1408, and to him the town owed much of its prosperity and many of its fine buildings. There are two dice carved on Toppler's tomb, because he cast dice for the city with the Burgrave of Nuremburg and won!

They were good sportsmen, these old fellows of the jackboots and plumed hats, the velvet doublets and the almost universal flowing whiskers; but Heinrich Toppler was more than a good sportsman—he was a good business man. He it was who had the bright idea of purchasing the estates of impoverished nobles round about and adding their lands to the town's territory.

Toppler directed much of the wall-building and the double bridge over the Tauber. He is called Rothenburg's greatest citizen; but he died by poison, in one of those dark and airless dungeons under the Rathaus, where his enemies had conspired to throw him, while his friends were vainly trying to tunnel a way for his rescue.

When the traveler is weary of churches he will do well to go out into the park and enjoy the views of the town's steep red gables, while below in the valley may be seen Toppler's own castle, where he used often to entertain his friend, the Emperor Wenzel. If the castle looks rather small to be called by such a fine name, it should be remembered that wherever a great man has dwelt, there is always a castle, no matter what its size.

OLD CITY WALL MAKES EXCELLENT PROMENADE

After visiting the park, a walk around the city on top of the old wall is in order. This may be reached by staircases at the city's gates. The wall has a roofed pathway some four feet wide, open on the town side only (see Color Plate III).

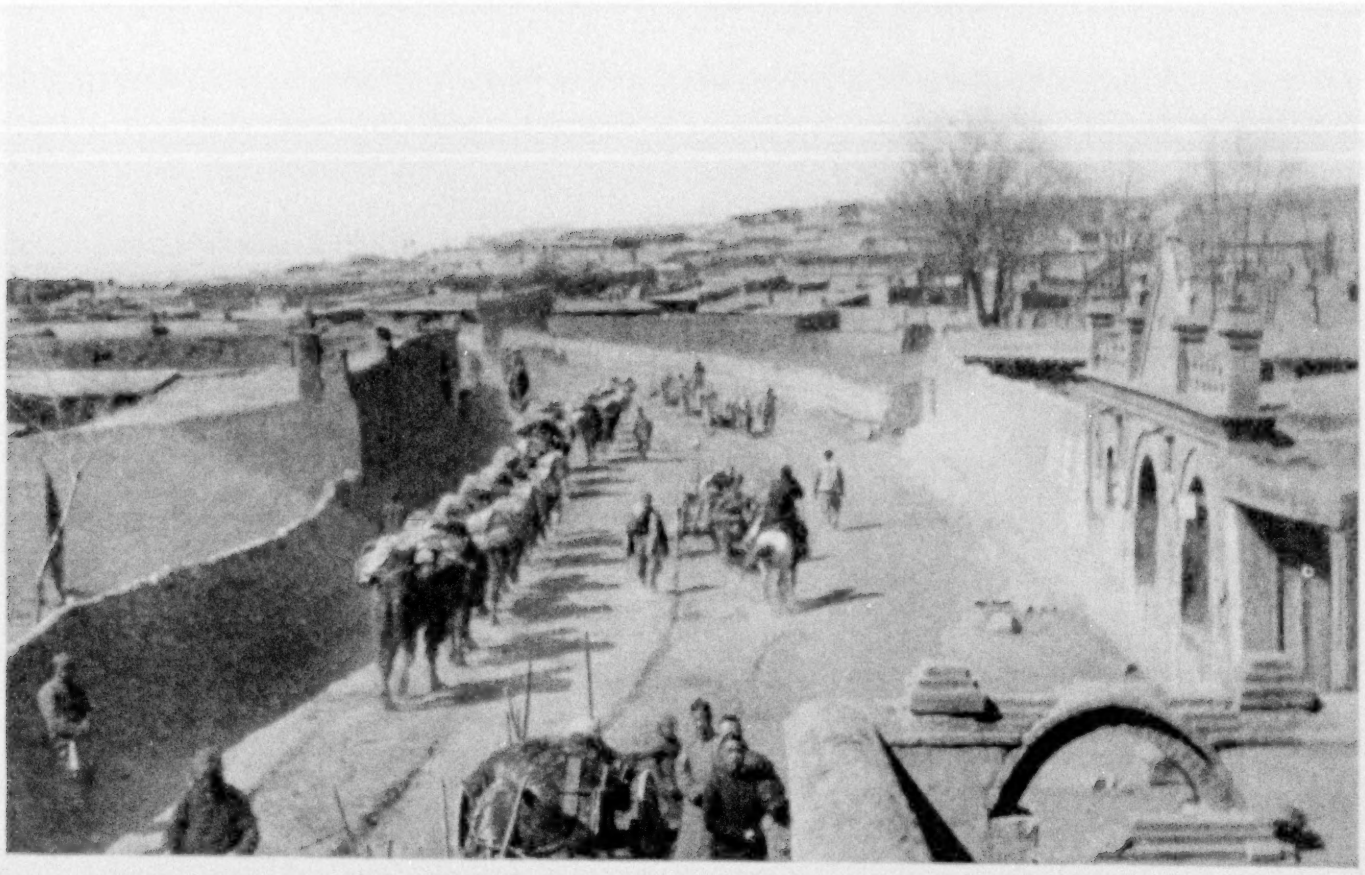
Loopholes in the outer parapet gave the town's defenders their chance to fire on the assaulting enemy. Scaling ladders were little used against such fortifications, and if a man or two gained the roof of the wall, the guns in the towers could fire on him, and he had the option of falling back into the moat or over the roof, 40 feet, to the cobbled street beneath.

The Spitalbastei, the great bastion at the extreme end of the town, is an epitome of medieval defense, with its five-foot walls, wide ramparts, and frowning old guns.

As a last and pleasing touch, one should read the old Latin motto on the near-by Kobollzellertor, the most picturesque of all the city's gates:

"PAX INTRANTIBUS
SALUS EXEUNTIBUS"

which may be translated roughly as "Peace to those who enter; safety to those who depart"—not a bad thought to cherish during the long half-mile trudge to the railway station where one bids Rothenburg a regretful *au revoir*.



FREIGHT CARTS AND A CAMEL TRAIN IN THE STREETS OF PAOTOW

STILT DANCERS DURING A CHINESE NEW YEAR FESTIVAL IN THE COURTYARD OF AN INN AT PAOTOW

A CAMEL TRAIN HALTS FOR WATER

The merchandise is from the far interior and is bound for Paotow (see page 197), the present terminus of the Peking-Suiyuan Railway, near the southern edge of the Mongolian Desert. The halt is three days' march outside the city, which is a great center for overland freight from Mongolia, northwest China, and Turkestan.

A CAMP OF CAMEL DRIVERS

They boil flour paste in a copper pot to make a crude sort of macaroni, to be washed down with strong tea. The cask is used to carry water.

THE ROAD TO WANG YE FU

An Account of the Work of the National Geographic Society's Central-China Expedition in the Mongol Kingdom of Ala Shan

By Frederick R. Wulsin

With Illustrations from Photographs by the Author

IT was at Paotow, near the southern edge of the Mongolian Desert and the present terminus of the railroad which points in a northwesterly direction from Peking across Asia, that the National Geographic Society's Central-China Expedition made its final arrangements for an eight months' inland journey through the Province of Kansu,* in the extreme northwest corner of China proper, where Mongolia, China, and Tibet come together.

Our mission was to gather from these little-known regions botanical and zoölogical specimens, which were subsequently presented by The Society to the U. S. National Museum, in Washington. In addition, I hoped to make a study of the people of northwestern China.

Our caravan consisted of 27 camels, besides horses, which were purchased at Paotow, and the retinue included 15 Chinese employés, among whom were four camel-drivers, who were to accompany us as far as Wang Ye Fu (Tingyüanying), in Ala Shan, a Mongolian kingdom which we estimated to be 23 days' march to the west. Here we were to find other transport for the remainder of our journey (see map, page 199).

Those 23 days grew to 39, for the way was longer and the going worse than anyone had expected.

The route from Paotow lay to the northwest, over dry, open country, dotted with the homesteads of a few Chinese settlers, who take up the land in Mongolia wherever there is enough water for farming.

The straight trail to our destination was far south of our actual route, but we had to avoid it, for at two points it crossed the Hwang (Yellow) River. Advancing spring had rotted the ice on the river until it was too soft to bear the weight of men and animals, and for a stretch of 1,200 miles there are no bridges.

THE CHINESE CAMEL MUST BE HUMORED

We kept to the northern bank, far enough from the river to avoid irrigation ditches, since a camel dreads mud more than cold, thirst, or hardship. His big, padded feet slip on wet ground, his long legs get tangled, and a fall may result in permanent injury.

The Chinese make their camels work all winter, leaving them no opportunity to put on fat and build up resistance to hardship. Camels owned by Mongols, on the contrary, usually make only two trips a season, and can, therefore, start out in the best condition, march fast, and keep going for long hours. They are the beasts which have made the camel's reputation in Asia (see page 206).

Ours were the inferior Chinese animals and had other peculiarities which we had to humor. For one thing, they fed best in the morning, after resting; so we traveled in the afternoon and evening.

Our short, fat Chinese cook found this arrangement deplorable and we shared his opinion. Breakfast and lunch were telescoped into one meal, called "brunch," taken about 10 o'clock in the morning. The next, except for hard-tack munched in the saddle, came late in the evening, sometimes at 11 o'clock.

We often finished a march in the dark, blundering into holes or leading our horses and looking for the trail with a lantern; but with a full or waxing moon, which lit up the still desert brightly and made mud-walled farms look like Arabian palaces, night marching was glorious.

I remember one evening in particular, when we ended our march by the dim

* See, also, "Where the Mountains Walked," by Upton Close and Elsie McCormick, in the National Geographic Magazine for May, 1922.

A CHINESE STREET MERCHANT OF PAOTOW

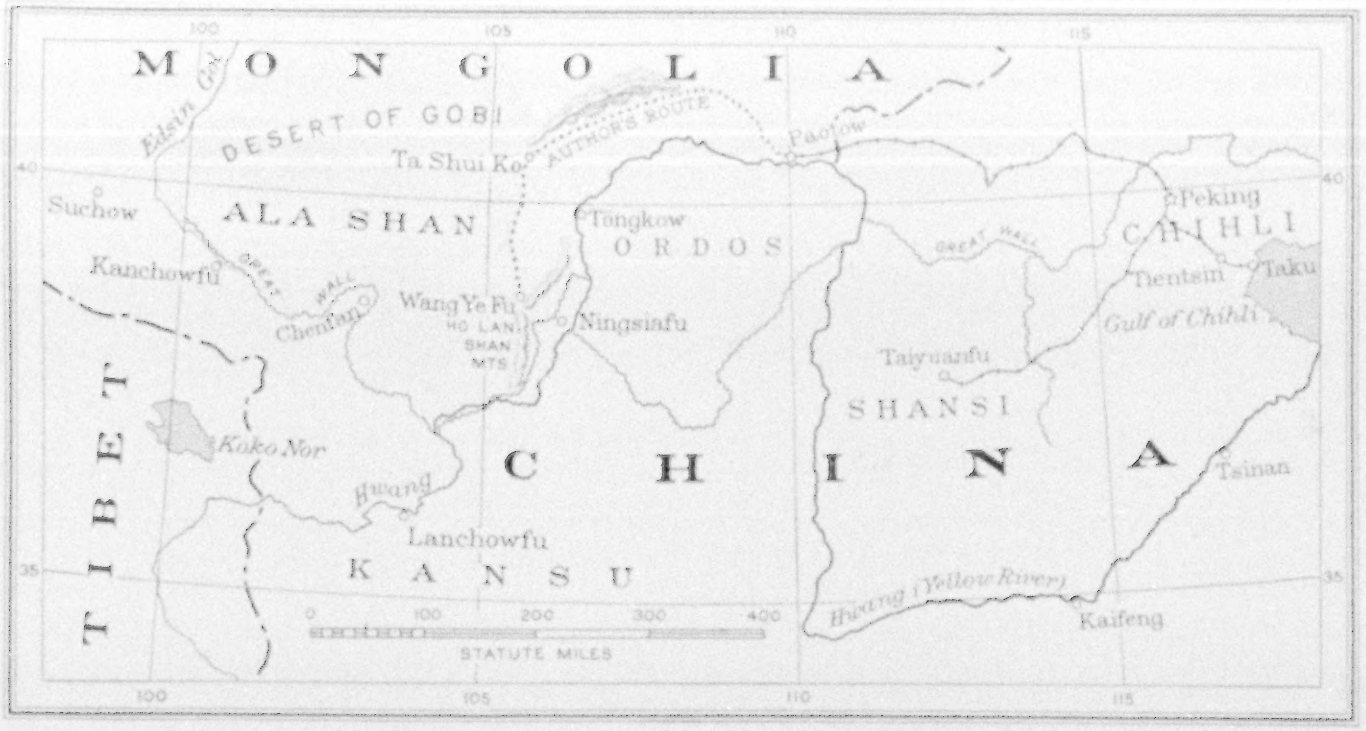
He packs up his wares when the day is over and carries them off in two boxes slung on a pole over his shoulder. Note the column in the background. Similar columns stand thick along the main street. On one night of the month which follows Chinese New Year, all are packed with fuel and lighted, turning the whole city into an inferno of flame.

light of the stars. My wife had been riding with me all afternoon, far in advance of the camels. Long after sunset we saw two trees dimly outlined over a hill against the sky, and after crossing a brook, we came suddenly upon the camp of a caravan of traders—dung fires shining through tent doors and black masses of grunting camels on their knees by the roadside, while dogs barked everywhere.

Up ahead, Mr. Wu, my principal Chinese assistant, leading his horse by the bridle, his rifle over his arm, was chatting with a Chinese who had sprung up from nowhere. Soon a guide appeared and led us off to the south, over uneven fields, to a small farmhouse hardly discernible in the darkness.

THE EXPEDITION CAMPS IN A BARNYARD

A single low building stood on one side of a square, mud-walled courtyard.



Drawn by A. H. Bumstead

A SKETCH MAP OF A PORTION OF THE ROUTE OF THE NATIONAL GEOGRAPHIC SOCIETY'S CENTRAL-CHINA EXPEDITION

The Expedition's caravan was organized at Paotow. After a march of 39 days, headquarters were established at Wang Ye Fu, capital of the Mongol kingdom of Ala Shan.

Inside was one long, low-ceilinged room, in the middle of which was a stove made of earth. On the sides were long brick platforms for sleeping accommodations. A clay dish of oil held a floating wick, whose flickering flame could hardly pierce the mixed fumes of frying food, opium, tobacco, and steaming humanity. Both sleeping platforms were crowded with camel-drivers, peasants, and travelers.

One glance at this squalor, and we set up our tent in the courtyard, among pigs, donkeys, and oxen. Our cook had elbowed his way to the fire. Soon he sent us canned soup, boiled millet, and the ubiquitous, underfed chicken of the Orient. We ate all we could—boiled millet is more filling than nourishing—and soon sank into oblivion.

At 3 a. m. a gale sprang up, whirling on high all the dry débris of the courtyard. For the rest of the night I kept my head under a blanket to avoid the flying dust and straw, emerging at intervals to lash down some part of the tent which threatened to blow away.

Each lull in the gale was punctuated by unearthly shrieks from a demented woman, a member of the farmer's family, who sought to outhowl the storm from her corner in the main building.

Dawn brought better weather and took us out to study the surroundings. There were a few fields, some sand dunes, and a brook which soon lost itself in the desert—a very desolate scene.

Four or five farmhouses stood close together. One was in ruins, having been looted by robbers a few months before. The thieves had been caught by soldiers from the nearest garrison and executed at the scene of the robbery. West of the ruin, on a sand dune, one robber's blackened head swung in a cage and a second broken cage lay on the ground with another head in it (see page 201).

Beyond, to the horizon, stretched the bare, brown plain of Mongolia, hazy in the pale light of morning.

MONGOL WEALTH CONSISTS OF ANIMALS

As we advanced, the farms became fewer, and after a week we turned due west over stony plains, empty and unfit for tillage. Soon we saw the tents of our first pastoral Mongols, which were small, round buildings of felt stretched on wooden framework—warm, snug houses for the bitter cold winter, capable of being taken down or set up in a few hours (see page 202).

The Mongols live on their sheep, goats, camels and horses. They eat the flesh, drink the milk, and sell the hair and the

A MONGOL GIRL BESIDE HER TENT

The costume is a mass of brilliant colors, but dirty and greasy. Her main occupation is drawing water at desert wells for her father's or husband's sheep, camels, and horses.

wool. They trade at the frontier towns and posts for the tea, cloth, ironwork, boots, and sugar which they require.

All their wealth is in animals and their lives are governed accordingly. They are obliged to take down their tents and move on, with all their belongings, when the pasturage near a camp is exhausted. In the past a severe drought has often caused long migrations in search of good grazing, with war as a possible consequence when the habitual range of others was invaded.

We think of pasturage as green, rich, and waving. Here it is sparse and dry, the grass growing in tufts. It is worse in the spring than at any other season, for the rainfall of all eastern Asia comes in summer. Autumn is, perhaps, the best season for travel; it is neither hot nor cold, and there is new grass for the animals.

Our own journey was made in the spring, and our camels grew thinner and thinner, though we gave them grain from nosebags to supplement the grazing.

Eventually the dry, stony country, like a level brown floor, with patches of grass, gave place to a desert of sand and dry brush that rose and fell in dunes and hillocks.

THE EXPEDITION'S LEADER AND A MONGOL WOMAN HAVE A MERRY GAME

Only one of our camel-drivers had ever crossed this region in years past, so we were delighted to pick up a one-eyed Mongol with a white donkey, who offered to guide us. He was about 40 years of age, a very homely man, pock-marked and sunburned to the color of mahogany, but good-natured. He wore ragged white trousers, a purple waistcoat, a violet turban, and a long coat of sheepskin. His native language was Mongol, but he spoke also a half-Chinese jargon which our camel-drivers pretended was perfectly intelligible.

One night we camped in a great circular bay in the mountains, surrounded by cliffs of red sandstone, floored with sand, and cut by a stream of ice-cold water (see page 204). Next day a steady procession of lamas—red-robed priests of Mongolian Buddhism—shepherds, merchants, and travelers, stopped to water their

animals. In the afternoon, on the march, we met a caravan of 140 camels carrying hides and wool from Kanchowfu, in Kansu, to the railhead at Paotow.

A little later a most extraordinary group came toward us over a sand dune—an ancient Mongol lady traveling with all her descendants.

We dismounted to photograph the party, which paused to inspect us. The youngsters tumbled off their camels, one in such haste that he fell flat. Nobody noticed him. They peered into the cameras and fairly tried to get inside them; then solemnly assured each other that they were field glasses.

The old lady, who stood only about four feet high, but was incredibly active, wore a shiny grayish-green gown that had once been purple, a yellow peaked bonnet, goggles of horsehair netting, and a yellow cloth strapped over her mouth to keep out the "blowing wind," as she put it. She rode the largest and most magnificent camel I have ever seen, with the fattest, stiffest humps—a sure proof of a camel's good condition.

Her boots were enormous, and I tried to compare my feet with hers. She thought it was a game, to see who could step on the other's toes, and she entered into the supposed contest with the greatest enthusiasm, to the accompaniment of loud peals of laughter. At length we parted regretfully, after having almost succeeded in trading off our donkey for one of the camels (see pages 205 and 206).

ORIENTAL JUSTICE

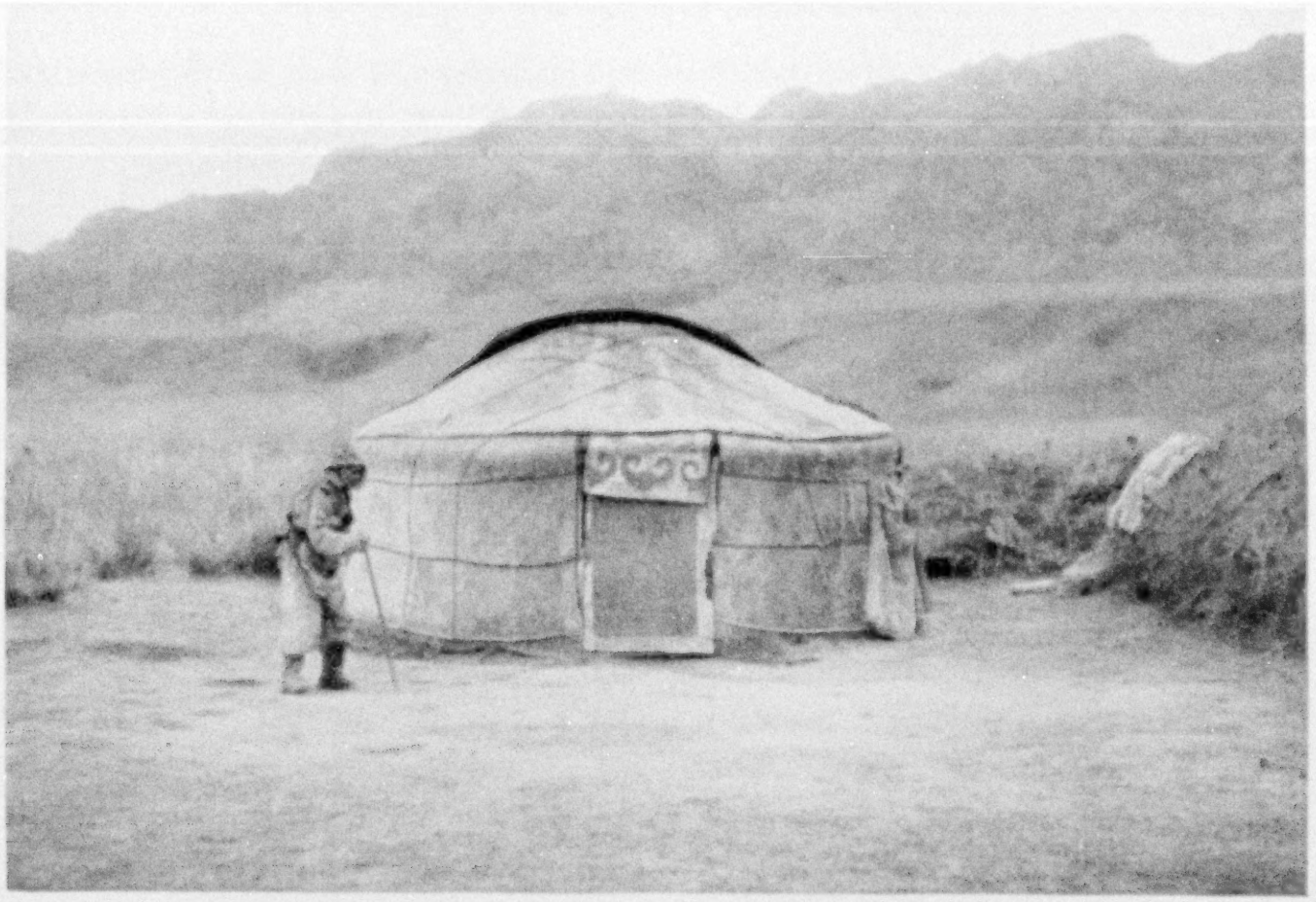
A robber's head swings in a wooden cage at the scene of the crime as a warning to evildoers (see text, page 199).

Two days later we came to Ta Shui Ko, a mud-walled trading post on the northern border of the kingdom of Ala Shan. The trail divides here, one part leading straight over the desert to western Kansu, the other turning south toward Wang Ye Fu, the capital of this little country.

We took the south fork, and continued over sandy, hummocky, brush-covered desert.

THE EXPEDITION "EATS BITTERNESS"

Unfortunately, our guide's ideas turned out to be rather hazy, so for several days we "ate bitterness," as the Chinese pic-



A MONGOL TENT FIVE DAYS' MARCH NORTHWEST OF PAOTOW

These circular nomad dwellings are made of felt stretched over wooden frames. A fire is built on the ground, in the center. They can be set up or taken down in a few hours (see, also, text, page 199).

turesquely put it. The trail was ill-marked and wells were uncertain. Sometimes we hunted for them until late at night. High winds blew and filled our eyes with sand. The camels grew distressingly weak, and at times we had to flog them to make the last half mile to water.

In this region I heard a curious explanation of the fact that skeletons of dead animals are most numerous near wells and drinking places in the desert, and not, as one would expect, far from them. I was told that a camel lacks the spirit of a horse or a man. Once thoroughly worn out and discouraged, he will lie down with his load on his back and refuse water and food until he dies on the spot. The skeletons seen by the traveler are of camels that almost reached the well they were seeking, but gave up and died a few hundred yards away.

At length we came into rolling grasslands, where Mongols were tending their flocks. The trail became well beaten and the wells were deep holes lined with timber, not simply shallow pits in the sand. The gaunt, ragged crests of the Ho Lan Shan appeared on our left, 15 or 20 miles away, and Mongol caravans passed us more frequently.

Suddenly one evening, at sunset, we saw a row of trees and a farmhouse with irrigated fields alongside a brook. This was the first green we had seen for days, and it is hard to describe the joy with which it filled us. We had come to the edge of the desert. The next morning, after an hour's march, we rounded a hill and saw the crenelated walls of Wang Ye Fu close before us. A great load fell from my shoulders as the camels wound down a long street lined with trees, blacksmith, carpenter, and food-sellers' shops, under the city wall.

QUARTERS FOUND IN A "HORIZONTAL" APARTMENT HOUSE

The first three days were spent in search of a dwelling. The camels had dumped us in the muddy courtyard of an ill-smelling Chinese inn, with low rooms opening all around it. There, from 200 to 300

A CAMELEER AND HIS PRIZED CHARGES

Asiatic trade routes are distinguished by the long, snaky camel caravans. Many cameleers spend monotonous lives with their animals, as they freight bales of merchandise to and fro across the desert. Their principal diversion is a short visit to a town. In Wang Ye Fu the Mongols lead their camels from booth to booth as they shop (see text, page 216).

MONGOLIAN CAMELS IN PRIME CONDITION

The fitness of a camel can be judged by the stiffness and fullness of its humps. These beasts are in excellent shape.

CAMP IN A VAST BAY, FLOORED WITH SAND, AT THE WEST END OF THE HO LAN SHAN, OR WOLF MOUNTAIN RANGE

A RICH OLD MONGOL LADY WITH HER BROOD

She is about four feet high, wears spectacles to keep out the dust, and a cloth pad over her mouth to keep the wind from blowing down her throat (see text, page 201).

A GROUP OF MONGOLS OF ALA SHAN

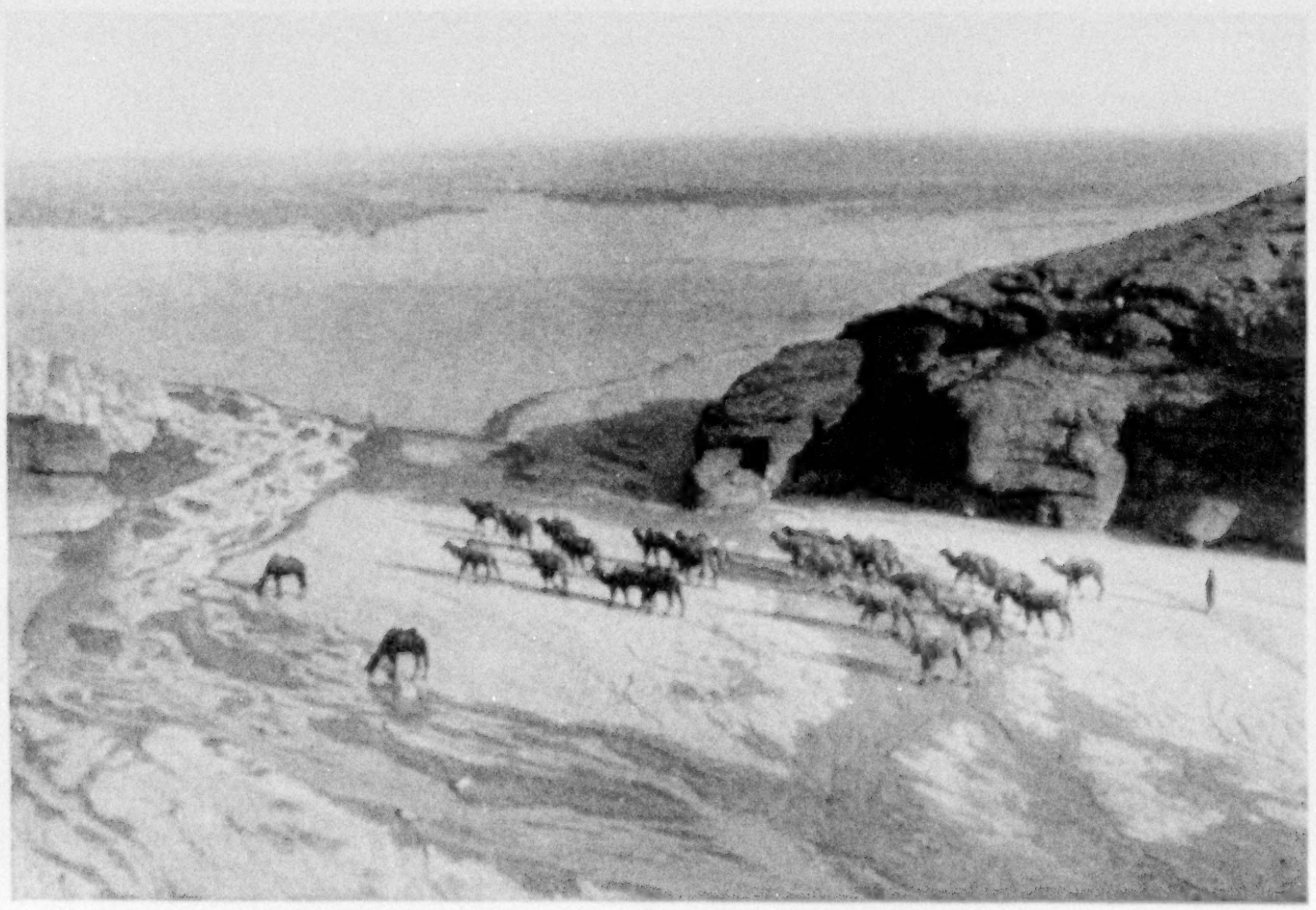
Though slow in speed as compared with the Arabian beast, the heavily built Bactrian camel is indispensable to the traveler and merchant in Asia. The finest breeds, according to one explorer, come from the Ala Shan district. They can carry full loads of 500 pounds, and are to be depended upon for crossing the desert or for struggling through a dizzy Himalayan pass. The well-cared-for animals owned by Mongols are those which have made the camel's reputation for endurance in Asia (see text, page 197).

THE COUNTRYSIDE NEAR WANG YE FU

Trees and irrigated fields surround the capital city of Ala Shan, but the desert begins half a mile to the westward and runs unbroken for many days' journey.

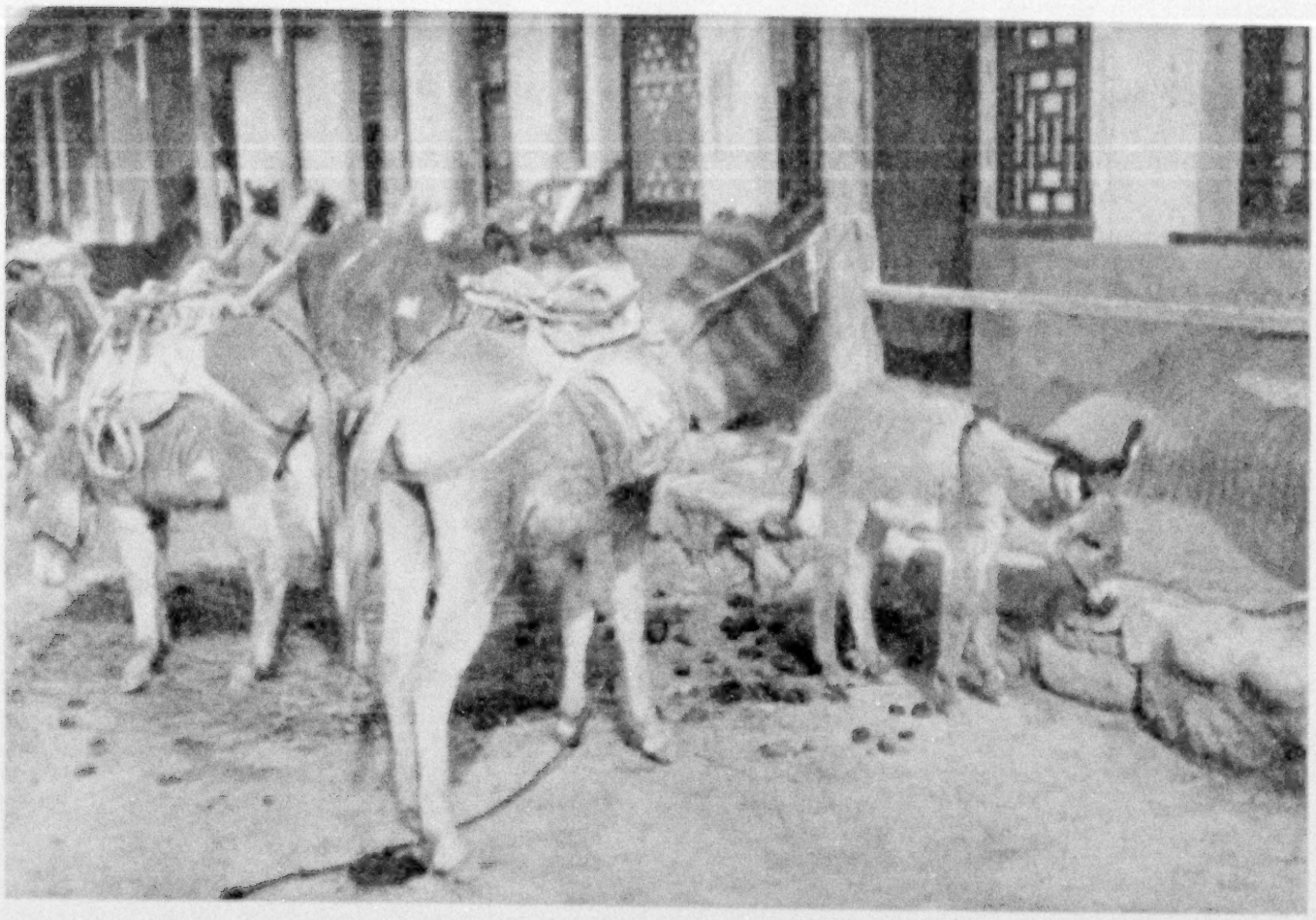
CAMP AMONG THE SAND DUNES IN THE ALA SHAN DESERT

For a three days' march in all directions from this spot, water is very scanty, and waterholes can be found only with a good deal of trouble.



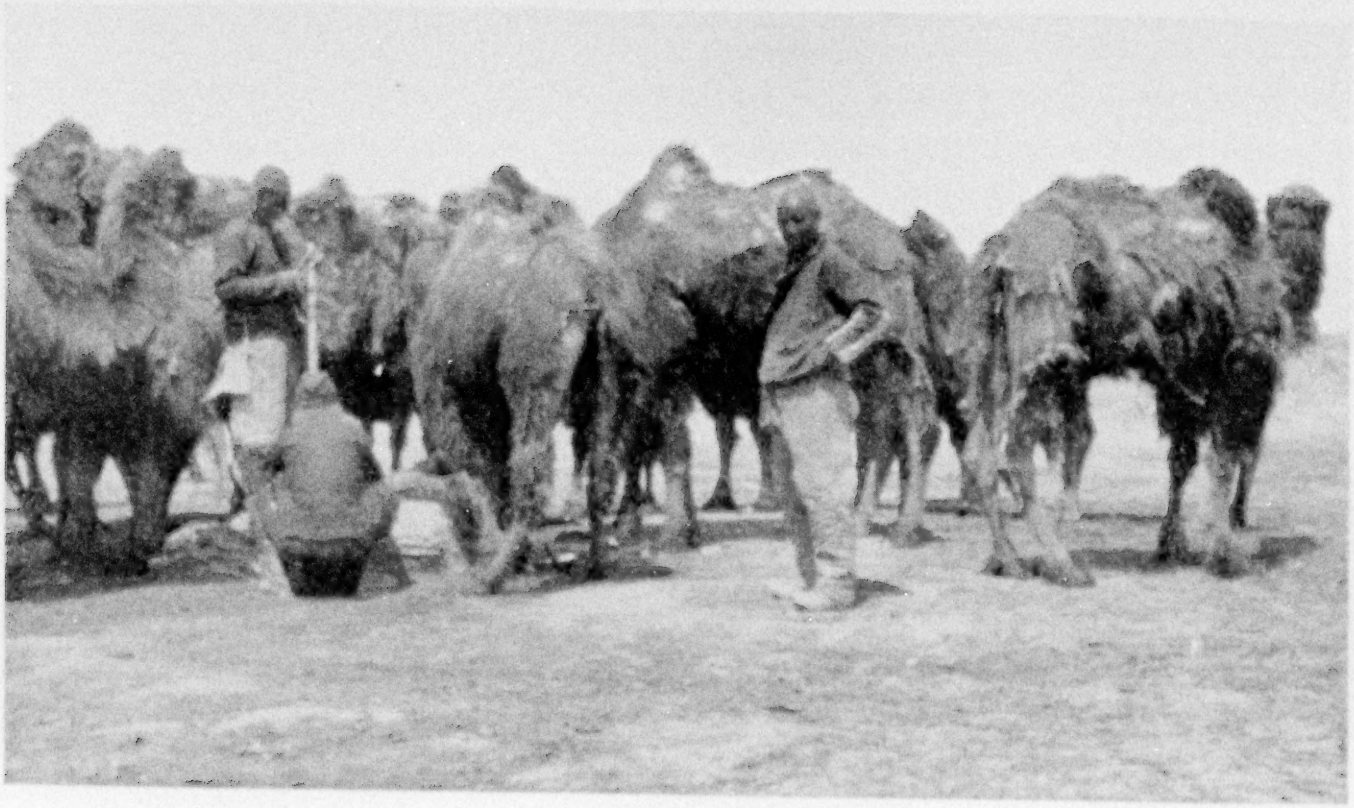
TA SHUI KO, OR "GREAT WATER GORGE," A FAVORITE WATERING PLACE FOR MONGOL CARAVANS

Camels are being driven out to graze in the late afternoon. It is late in April, but there is still ice in the shady rock gorges of the Lan Shan, or Wolf Mountain range, which feeds the stream here shown.



PACK DONKEYS USED IN ALA SHAN BY PEASANTS AND WOODCUTTERS

This is the only means of transportation available for short trips into the Wolf Mountains, which border the Mongol kingdom on the southeast.



WATERING THE NATIONAL GEOGRAPHIC SOCIETY EXPEDITION'S CAMELS AT A WELL IN THE ALA SHAN DESERT

The animals acquire a moth-eaten appearance as spring advances, for their heavy winter coat comes loose in patches. The drivers pluck it off after each day's march and sell it to wool traders. Autumn, winter, and early spring are the best caravan seasons.

THE CROWD NEAR A CHINESE THEATER OUTSIDE THE WALLS OF WANG YE FU

A CHINESE COOPER SHOP IN WANG YE FU

He works for the camel caravans, making casks to carry water and the frames which support the roofs of the Mongol tents.

A RICH MONGOL BRIDAL COUPLE AT WANG YE FU

The bride wears the distinctive Wang Ye Fu headdress. The clock on the table, a wedding present, is a source of great pride to both.

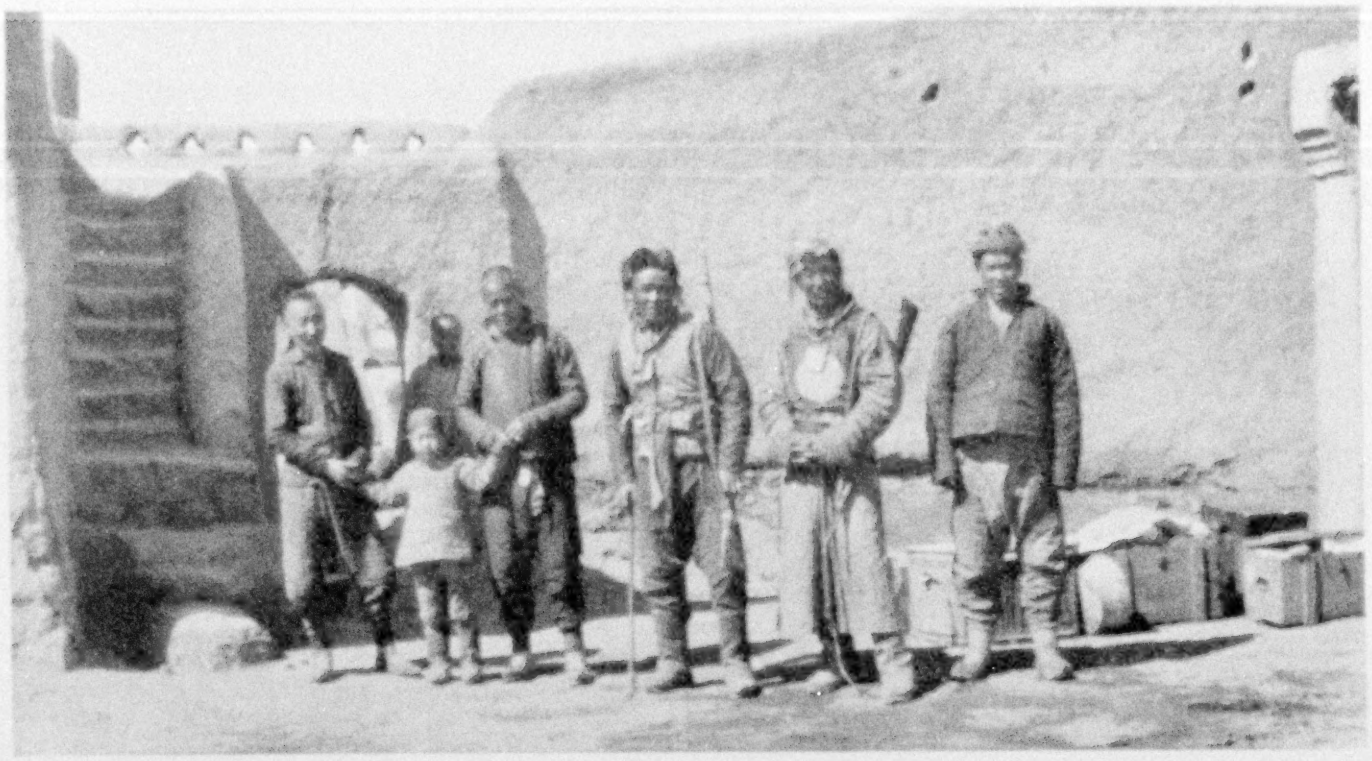
Mongols gathered and stared at us, open-mouthed, for the greater part of three days. Individuals went home to eat and returned, but the crowd was there from early morning until late at night.

When we closed the door of our room the more curious would squeeze close to the window, block out all the light, and poke holes through the paper window-panes with their fingers. I finally found that the best system of self-protection was to leave the door open and to wash my hands frequently, flinging the suds and water into the courtyard. The crowd would dodge the deluge, and thus we obtained momentary breathing space.

Finally we discovered what might be called a horizontal apartment house, a courtyard on which a dozen rooms opened, each rented to a different tenant. We hired six, had them whitewashed, set up camp cots, put our books in a corner, and installed ourselves.

From the housetop we could see Wang Ye Fu spread out around us, the walled city rising to the north, and flat roofs shaded by green trees on level ground to the east, west, and south. Three little mud forts commanding the northern wall broke the skyline.

Beyond our court lay another, where my taxidermists had quarters. Our landlord, Mr. Mung, received his guests there, and also his customers, for he had a grain and feed store and a wine-shop and held the office of postmaster. The flour mill of



CHINESE TRADERS AND MONGOL SOLDIERS

Mud-walled Chinese trading posts are scattered along the busier caravan trails in Mongolia.

THE REGENT OF ALA SHAN, SOME OF HIS RETAINERS, AND TWO AMERICANS

The author, leader of the National Geographic Society's Central-China Expedition, is seated beside the Mongol ruler.

MEMBERS OF A WEDDING PARTY IN WANG YE FU

The bride's mother, a fine old Mongol lady, was caught smoking her pipe. Her daughter is trying to conceal it from the photographer.

the establishment, run by donkey power, lay at a lower level, under the main one-story buildings.

PORTRAIT PHOTOGRAPHS BECOME FASHIONABLE

Our activities almost crowded Mr. Mung out of his courtyard. The taxidermy shop was always busy and often crowded with visitors. Several of my men were out every day, shooting birds in the fields near the town, and once I sent a party of them into the Ho Lan Shan for more protracted hunting. Mr. R. C. Ching, the able botanist of the expedition, was constantly in the mountains.

Our scientific collections grew rapidly. We posted big red placards in Chinese all over the city, offering to buy any wild animals brought to us. Soon a steady stream of people invaded the courtyard, from old men with a few eagle feathers to small boys with very active mice held by the tail, all coming in answer to our advertisement.

Others wanted to be photographed.

THE VESPER BUGLE CALL IN ALA SHAN

Soldiers of the king's guard are sounding retreat on long trumpets inside the south gates at Wang Ye Fu.

They had been shy at first, but after we had persuaded a few social leaders to have their pictures taken, it became very much the fashion and fresh sitters appeared at all hours.

Our house was situated on a quiet, shady street—"East Wall Street," we called it—which ran along outside of the city wall and led to the main gates. Inside the walls we used to meet lamas in red robes, soldiers off duty, officials who still wore the colored cap buttons of old Manchu times, and rich Mongol and Manchu ladies in fine silks who strolled in dignified leisure.

The government offices occupied a row of plain brick buildings behind an ornamental arch. Here writing brush and seal still serve instead of typewriter and signature. Near by was the king's palace—an attractive two-story, semiforeign house, set back in a garden—and the lama temple, the real heart of the city.

THE VARIED LIFE OF WANG YE FU

Most of Wang Ye Fu lies outside the walls, and consists of flat-roofed houses, often with big gardens. Three small streams cut straight across the city. A long street of blacksmiths, coppersmiths, and carpenters winds west from the gate along the city wall.

Logs are transported on donkeys from the neighboring mountains, and two carpenters, using a big saw in the age-old Chinese fashion, turn them into boards, the logs being propped up vertically between the workers.

Most of the wood is pine and spruce, too soft to be of value for export. It

A NEARER VIEW OF THE BUGLERS SHOWN ON PAGE 214

Though Wang Ye Fu was founded nearly 250 years ago, most of its inhabitants are still nomad herdsmen. It has something approaching a court and is one of the few border towns affording the nomads a glimpse of settled city life (see text, page 233).

A CHINESE TINSMITH IN THE STREETS OF PAOTOW

is made up here into furniture for the Mongol market. Frameworks and low doorways for the felt tents, small portable cupboards, chests and boxes, watering troughs and ready-made linings for the wells in the sand, are among the products manufactured.

The coppersmiths hammer out great, flat, circular water-bottles, nearly two feet in diameter and four or five inches thick. These hang from the camels' packsaddles on a journey. Tall, round pots with handles, for tea, and lower, broader pots, for cooking over a dung fire, are also made.

There are three silversmiths in the town, who, working with fine files and tiny hammers, make the gorgeous earrings which the Mongol women wear.

Most of the blacksmiths use the street for a workshop, setting their anvils and forges near a house wall, under an awning. Nobody protests, for is not the street public property?

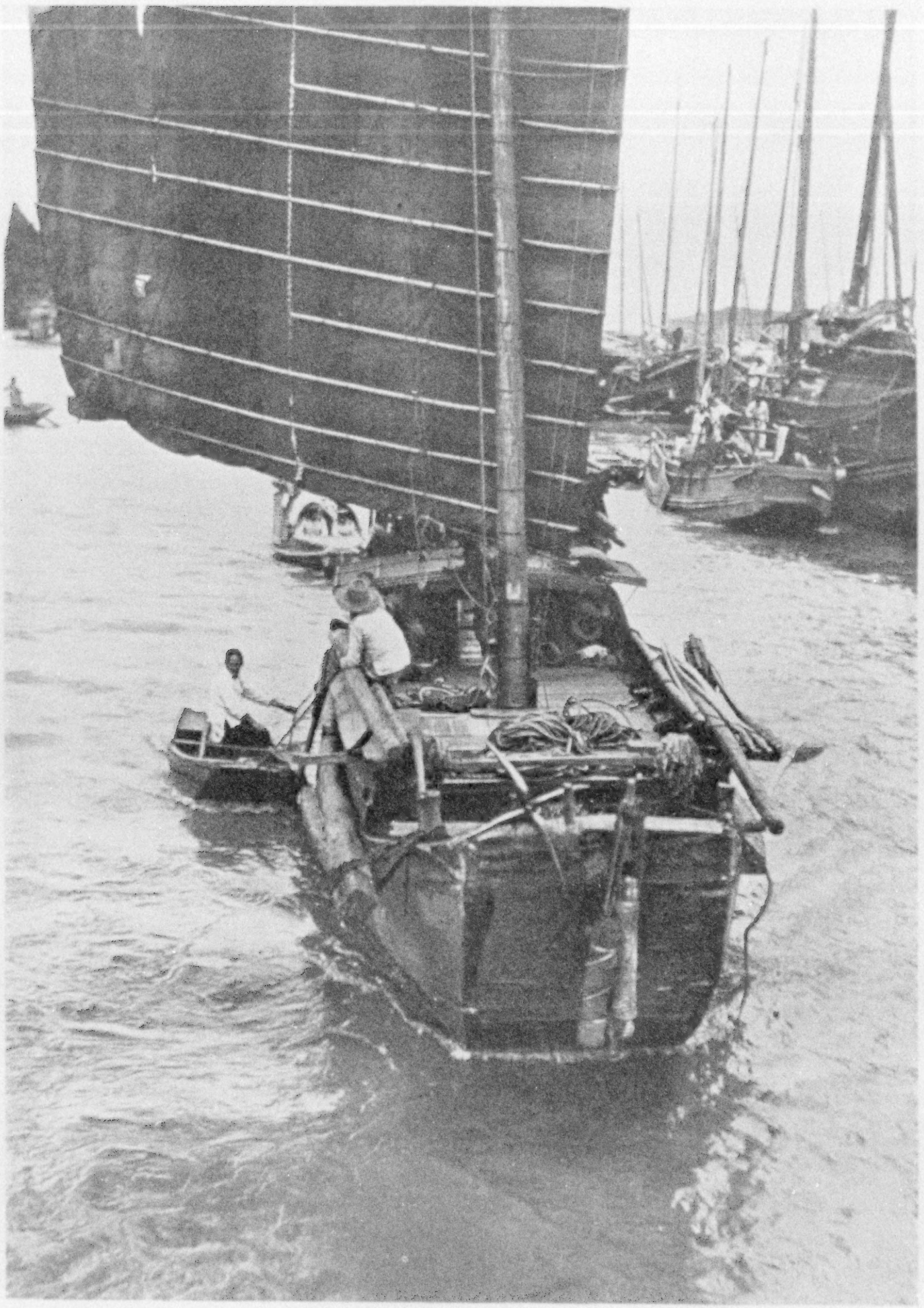
The dyers work their vats on the streets or in the courtyards, and hang up long strips of dripping blue cotton cloth to dry in sequestered nooks. Down in the stony stream beds half-naked young men set sheepskins and goatskins to soak; then beat and scrape them for market.

The main shopping street runs south from the gate. A few big trading firms have imposing Chinese gateways which lead to great inner courtyards, large enough for a whole caravan to unload its wares, and quiet side rooms where tea is drunk during discussions about business. Most of the retail trade, however, is done in shady little shops which open wide on the street.

The merchant stands behind his black counter with his wares piled on shelves behind him, an apprentice or two in long blue gowns dodging back and forth to tend the stove or bring goods that are called for from the inner room. Poorer merchants set up an awning in the street and spread out their wares on the ground.

MONGOL MIGRATIONS HAVE WRITTEN WANG YE FU'S HISTORY

Merchandise comes in by caravan. One day the town will be deluged with stamped tin wash-basins, and a week later not one can be had. The Mongols come in for a few days to shop, leading camels from booth to booth as they bargain; then,



Photograph by Robert F. Fitch

BOAT LIFE IN CHINA

Millions of people live on the river junks of China and many of them never leave their boats to go ashore. The craft are mostly from 20 to 50 or 60 feet in length, having one or two square sails. The river women carry their youngest children strapped to their backs, while to the larger ones are fastened dried bottle-gourds to keep them afloat when they fall overboard, which is not an uncommon occurrence.

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THE FIVE-ARCHED MARBLE GATEWAY TO THE MING TOMBS

The site of the Ming Tombs, chosen by the Emperor Yung Lo, is a peaceful valley some 30 miles northwest of Peking. The remains of 13 out of the 16 monarchs of the Ming Dynasty are interred here. This *p'ai lou* (memorial gateway) was erected in 1541 and marks the principal entrance to the Valley of the Tombs. It is 50 feet high and 80 feet wide and is, perhaps, the finest in China.

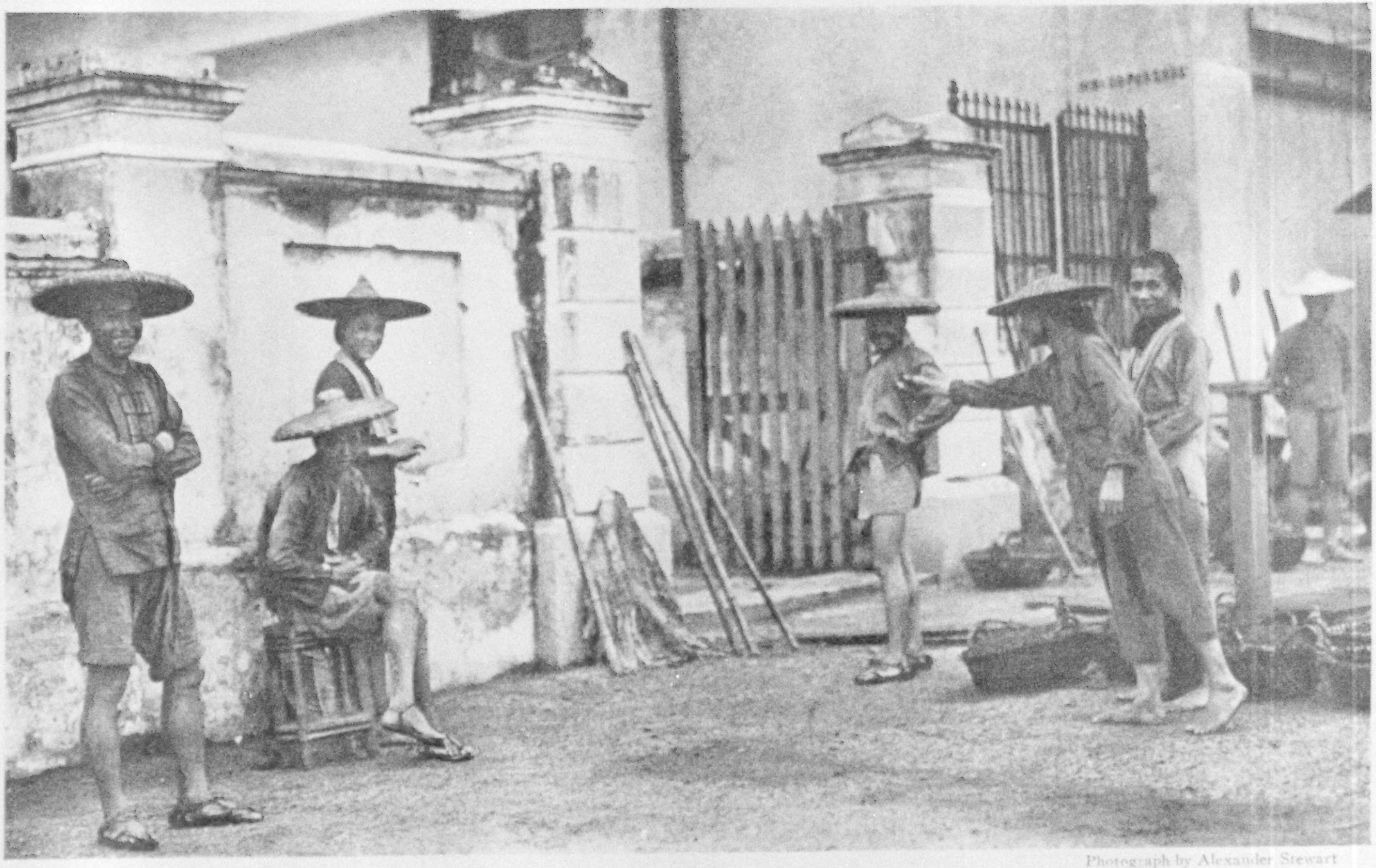
Photograph by Dr. Osvald Siren

THE OUTER TOWER OF THE TE SHENG MEN, OR GATE OF VICTORY, PEKING

This north wall of China's capital city, built of brick, stone, and concrete, and 60 feet thick at the base, was constructed either by Kublai Khan or by the Emperor Yung Lo. The great towers which surmount the gates in the wall are of comparatively recent construction, none of them dating earlier than the 15th century, while some are modern. They are pierced with many apertures, supposedly for cannon, but now generally empty.

Photograph by J. T. McGarvey

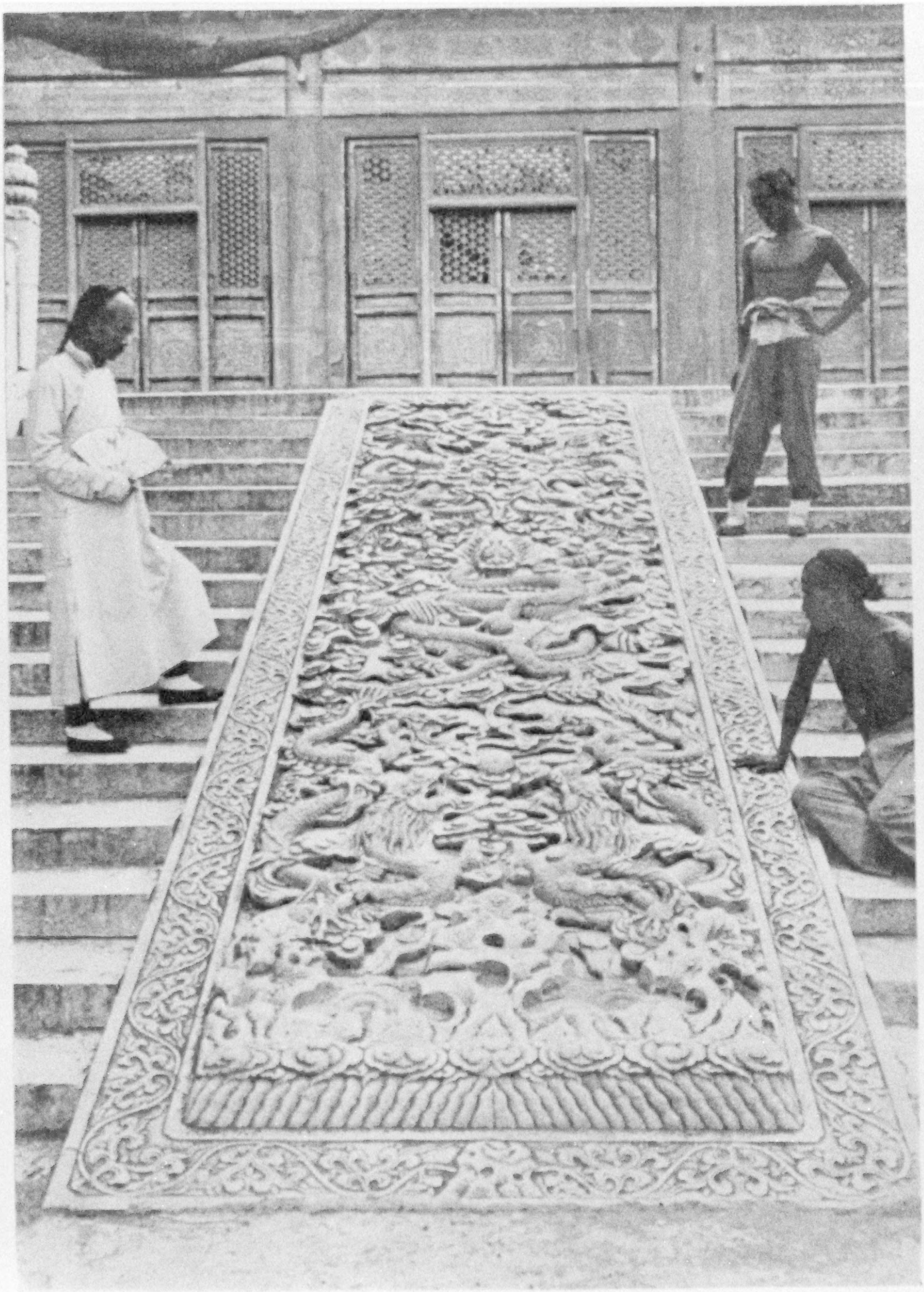
CHINESE WORKMEN TAMPING DIRT WITH A LARGE METAL DISK, CHIHLI PROVINCE



Photograph by Alexander Stewart

CHINESE COOLIES PITCHING PENNIES

The Chinese coolie is one of the hardest workers on the face of the globe. He often carries a burden of from 100 to 200 pounds a distance of 8 to 15 miles a day, receiving on an average about 10 cents for his labor. Despite the hardships and privations that fill his life, he is a cheerful person and something of a sportsman. One of his favorite forms of diversion is "pitching pennies." A coolie will sometimes wager a whole week's salary on a single pitch, and lose without a murmur, thereby disproving the axiom "easy come, easy go."



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A CARVED MARBLE STAIRWAY IN THE TEMPLE OF CONFUCIUS, PEKING

Almost every city in China has its Confucian temple, where, in the spring and autumn, important rites are solemnized. A triple stairway leads to the Hall of the Great Perfection in the temple of Peking, but only spirits may use the central portion, which consists of a single slab of marble wonderfully carved in dragon design. Similar but less elaborate dragon stairways are to be found in many parts of China.

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ONE OF THE SUPERB BRONZE LIONS IN THE COURT OF THE LAMA TEMPLE, PEKING

This temple monastery is located near the north wall of the city (see page 219) and was once an imperial palace. Under the Empire it was liberally subsidized, but the Republic has allowed it to fall into disrepair. It was once the residence of an "Hutuktu," or Living Buddha, and housed some 1,500 priests and monks, mostly Mongolians. Inside the temple is a great wooden image of a Buddha 75 feet high, reputed to be carved from a single trunk of cedar.

Photograph by Richard M. Vanderburgh

A VIEW OF UPPER FOOCHOW, FUKIEN PROVINCE

In the river are great rafts of new lumber. China's nonnavigable streams are often entirely covered with lumber at flood time, when guards are stationed at short intervals along the banks to prevent theft of logs. This seaport on the Min River, between Shanghai and Hongkong, is famous for its exquisite lacquer ware and for its beautiful relief carvings.

Photograph by Charles H. Kragh

THE THREE PAGODAS AT KASHING, ON THE GRAND CANAL

Construction of this noted waterway, running from Hangchow to Tientsin, is supposed to have been begun in 480 B. C. For centuries it was used to transport tribute rice to Peking. It is crossed by many beautiful stone bridges and lined with pagodas and memorial arches. The sails of the Grand Canal junks have been aptly described as "one-fourth matting, one-fourth holes, and one-half miscellaneous material."

Photograph by J. T. McGarvey

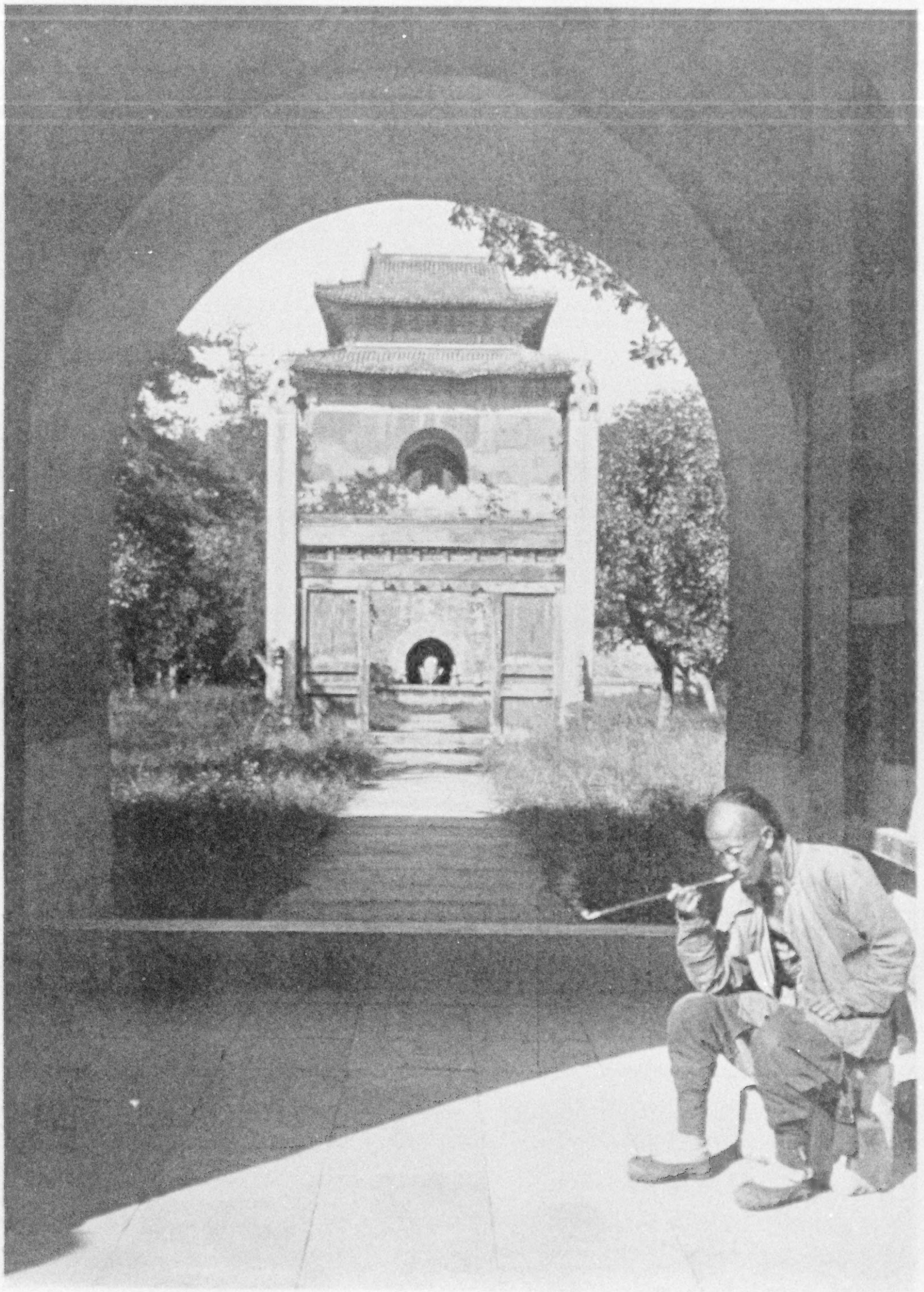
A PEKING CART

The heavy wheels of this distinctive vehicle are iron-tired and somewhat loose on their axles. As they are totally devoid of springs and the roads are usually rough, a lengthy journey in one of these carts does not constitute a pleasure jaunt. The driver covers most of the journey on foot, trudging along beside his mule and only occasionally taking a rest by sitting on the shaft. The Peking cart, until very recently, was extensively used throughout North China, but it is fast being displaced by more modern and more comfortable methods of transport.

© Herbert G. Ponting

MONGOLIANS BRINGING YOUNG FALCONS TO PEKING

Falconry is an ancient sport in North China. In early times it was a very practical pursuit, aiding man in his search for food, but it later assumed the proportions of an avocation among the Manchus and Mongols of the capital city. The small leather hoods which cover the heads of these birds are only removed within the loft or at the moment when the falcon is to be flown at quarry (see, also, "Falconry, the Sport of Kings," in the NATIONAL GEOGRAPHIC MAGAZINE for December, 1920).



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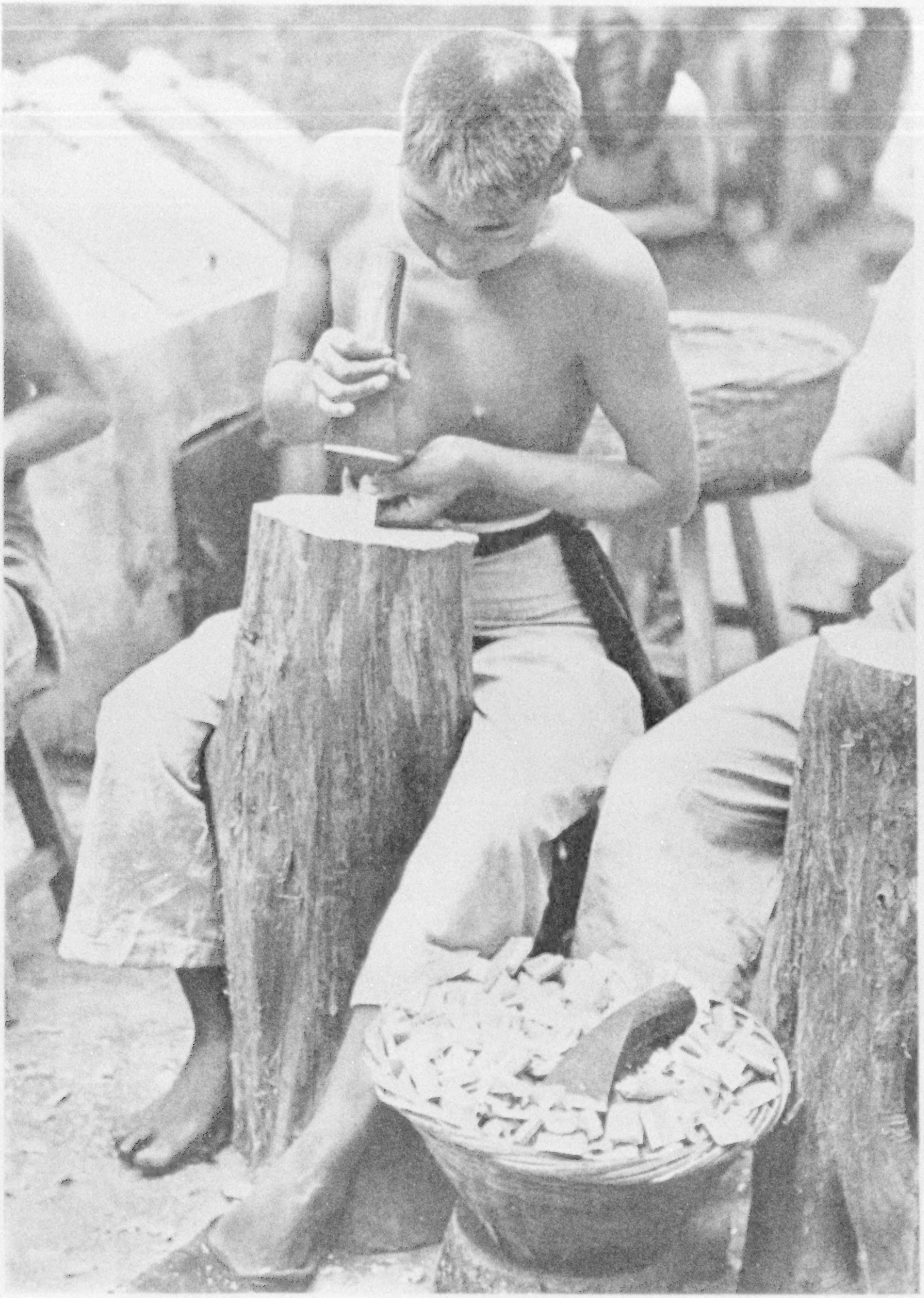
ENTRANCE TO THE TOMB OF THE MING EMPEROR, YUNG LO

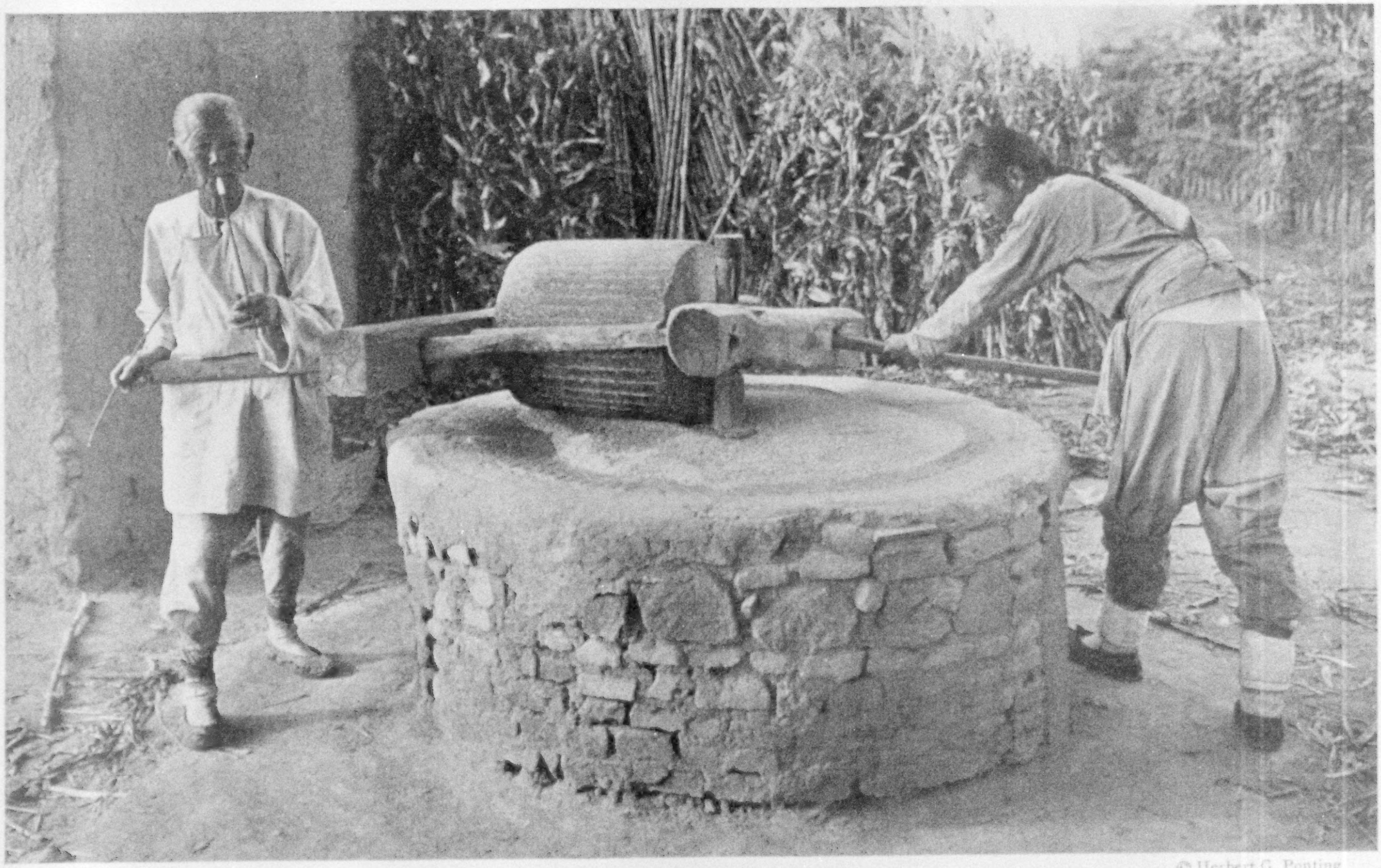
The "Soul Tower," seen through the arch, contains the tablet inscribed with Yung Lo's posthumous title. The Mings, of whom Yung Lo was the second and one of the greatest, were unstinted patrons of the arts. The carpets, silk embroideries, porcelains, jades, and ivories of their times are among the finest that China has produced. Note the peculiar pipe being smoked by the man seated at the right. The bowl holds less than a thimbleful of tobacco.



Photograph by International Newsreel

A MAH JONGG CRAFTSMAN AT WORK IN SHANGHAI

The origin of the now world-famous game is attributed by some to a Chinese fisherman named Sze. For many years sets were manufactured on a rather small scale, but when the craze reached America the demand for them became so great that it was necessary to build many factories to supply the orders. Mah Jongg sets are made of bone or ivory and bamboo. Bamboo is plentiful in China, but much of the bone comes from the Chicago stockyards.



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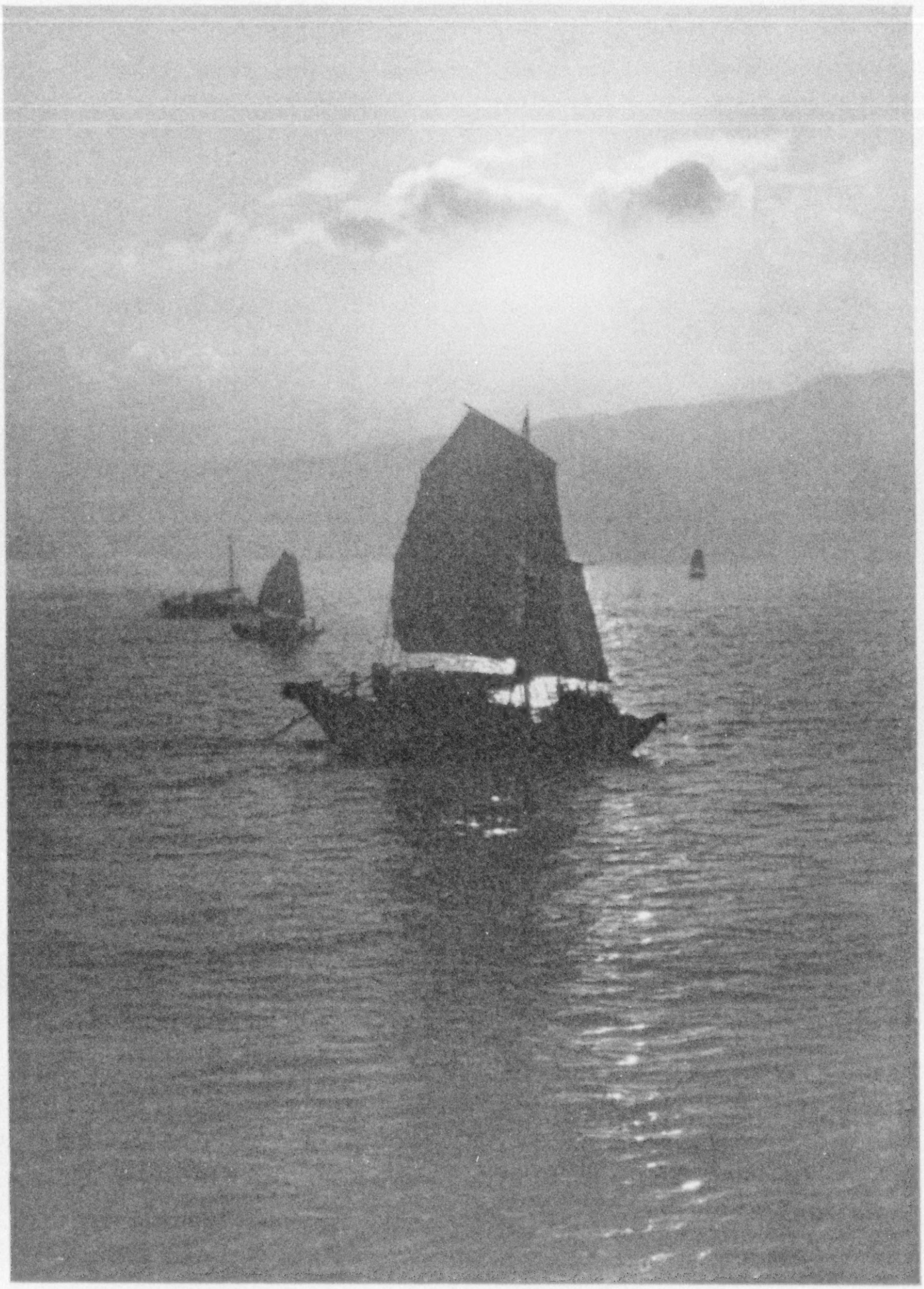
MOTHER AND SON GRINDING BEANS ON A FARM IN NORTHERN CHINA

Photograph by Charles H. Kragh

WOMEN AT WORK IN A CHINESE RICE FIELD

The success or failure of the rice crop is the difference between life and death in many parts of China, where it is the staple food of rich and poor alike. The seed is sown thickly in a small field that has been flooded, and in a short time it sprouts luxuriantly. When the shoots reach a height of six or seven inches they are pulled up by the roots and tied in small bundles, which are then planted in the rice fields proper. These fields must be under several inches of water from then until harvest time, if the crop is to be bountiful.



Photograph by W. Robert Moore

SUNRISE OFF THE CHINA COAST

Chinese sailors had solved many of the secrets of navigation long before the mariners of the Western World. For centuries their junks have plied the China coast, yet their design to-day is scarcely different from that of the ancient craft.

loaded up, they turn back to the desert.

As the desert is the key to Wang Ye Fu's industries, so Mongol migrations are the key to its history. It was founded nearly 250 years ago by a Mongol tribe or division, which sought refuge with the emperor of China. Galdan, a great warrior and conqueror, head of the Eleuth Mongols, had driven the tribe from its ancestral home and grazing grounds near Koko Nor (see map, page 199). During migration a few Moslem refugees and Mongols of other strains joined them.

The emperor granted the refugees the land they still occupy, north of the Province of Kansu, and the wall of the city still bears a Chinese inscription to commemorate its founding.

The kings of Ala Shan enjoyed high favor with the emperors of the late Manchu dynasty, and on several occasions married daughters of the Imperial family—a fact which accounts for the presence of rich Manchu families in this out-of-the-way corner. They came in the retinue of a princess, or as refugees after the 1911 revolution, which overthrew the dynasty.

A RICH MANCHU LADY OF WANG YE FU IN HER BEST COSTUME

1,200 MILES OF EMPTINESS

Although there is something resembling a court in the capital, most of the people of Ala Shan are still nomad herdsmen. Their country is about 300 miles long from east to west and as wide from north to south, with its southern edge resting on the Great Wall of China and its northern border lost in the Gobi Desert.

On the southeast the Ho Lan Shan, a steep and stony mountain range which rises to about 10,000 feet, separates Ala Shan from the valley of the Yellow River and the Chinese city of Ningsiafu.

To the west Ala Shan extends to the Edsin Gol, a small river which flows down from the snow peaks of the mountains of western Kansu, past the city of Suchow, divides, and loses itself in two desert lakes.

To the northwest the desert and prairie stretch 1,200 miles without a city.

Wang Ye Fu is one of the few towns which border on the empty land of the nomads and affords its dwellers glimpses of some of the comforts of settled civilization.

The pastoral life is full of hardships and, as a rule, diseases are quickly cured or are fatal. Many of the Ala Shan Mongols have had smallpox, which can be treated successfully by Chinese methods.

Sometimes, however, Chinese and Mongol ideas of medicine are disconcerting. To a heavy-set herdsman who once came to me with a high fever I gave quinine and ordered rest and light diet. The next day I found him outside the chief Buddhist temple, engaged in performing a long series of prayers and prostrations prescribed by a friend in the priesthood as an infallible remedy for fever. Of course, he had taken my medicine, but ignored the advice that went with it.

The Ala Shan Mongols are well-formed and healthy. They are short, thickset men with round, brown, weather-beaten faces; not lean and spare like Tibetans, but solid and muscular. They walk like football players in hobnailed shoes, the shoulders somewhat forward and the feet set down like stumps, perhaps because of the enormous boots with flat, stiff soles which they have worn from childhood.

In Wang Ye Fu the country Mongol is only a visitor, though a frequent one, and his character has left its mark in every detail of the city.

THE CHINESE ARE TRADESMEN AND WORKERS FOR THE MONGOLS

Most of the town's working population is Chinese, from Chenfan, in Kansu, 150 miles to the west, across the desert. Life is hard in Chenfan and the land is very poor; therefore many people migrate to Wang Ye Fu, where there is a market for their labor as merchants, gardeners, carters, and blacksmiths. They are gladly received by the Mongols, who do not care to do these things themselves and yet need the services rendered.

Rich Mongols have irrigated fruit and vegetable gardens adjoining their houses, on the edge of town, but the gardeners are generally Chinese.

The Mongol may move to a town and learn letters, but he always remains far more apt at praying and riding than trading.

There are only two cities in Ala Shan—Töngkow, a salt market and shipping point on the banks of the Yellow River, and Wang Ye Fu. The latter lies in a well-watered oasis below the western flanks of the Ho Lan Shan. From the forts on the hill one looks out to a level, yellow horizon. Almost all the country is desert, with wells here and there which are used for watering goats, sheep, horses, and camels.

I was unable to obtain an accurate estimate of the population and the regent seemed amazed that I should make inquiries on the subject. He admitted that there were probably several tens of thousands of inhabitants, but that was absolutely all he seemed to know. From the fact that, all told, there are less than 6,000 lamas in three of the noteworthy temples in and near Wang Ye Fu, the total population is probably less than 50,000.

THE FARMER IS PUSHING THE NOMAD INTO THE DESERT

Ostensibly, a Mongol king rules Ala Shan, and his brother, a Mongol duke, is regent in his stead. But in reality the power lies with the nearest Chinese garrison, for the Mongols of the present day are too poorly armed and too few in number to oppose the Chinese with success. When two Mongols quarrel, or go to law, the case is decided by the Mongol authorities; but if the suit is between a Mongol and a Chinese, it goes to the nearest Chinese official for decision.

Farmers are constantly coming up from China to settle on the land. At first they pay rent to the nomad owners, and all is well, but eventually the land changes hands. The new occupant often refuses to pay rent, and for lack of deeds and landmarks the Mongol is almost sure to lose his lawsuit, after which he goes away smarting from the injury and without means of redress.

When Chinese settlers become numerous in any one locality, Chinese officials follow, to take over the administration of the district.

The wiser Mongols realize that eventually all except the most arid parts of Mongolia will be lost to them; but they are helpless. It is the age-old struggle between the farmer and the nomad, in which the farmer almost always wins.

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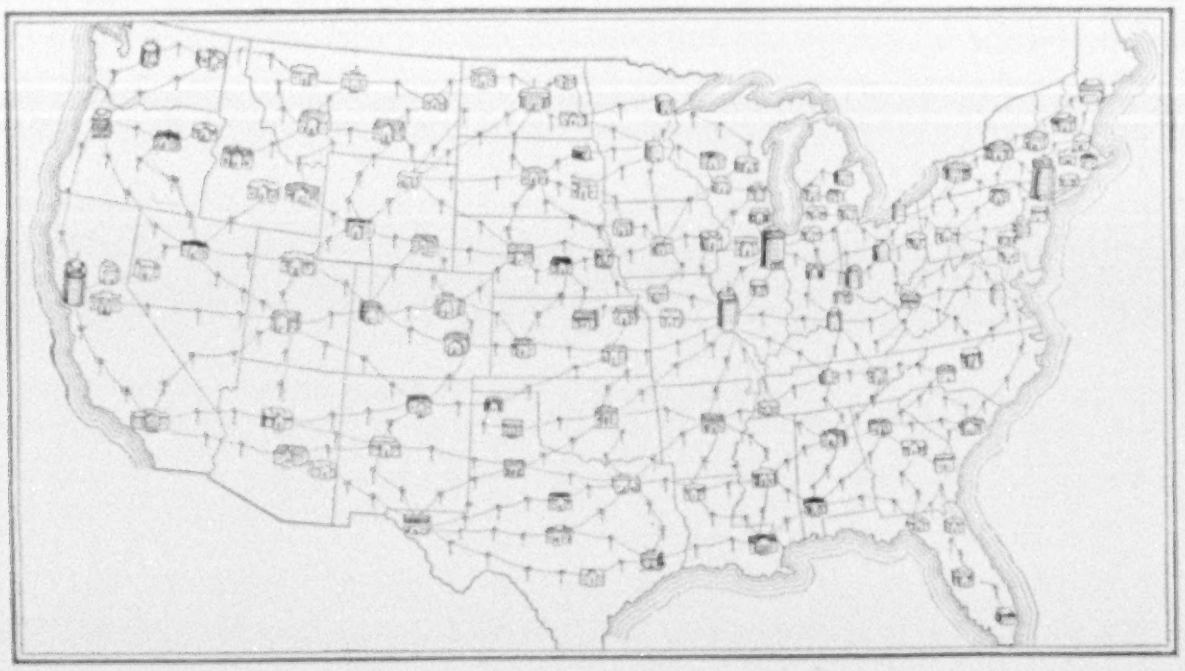

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There are still to come many other discoveries and achievements, not only in transmission of speech, but also in the material and construction details of every part of the network of plant.

The future of the telephone holds forth the promise of a service growing always greater and better, and of a progress—the end of which no one can foresee.

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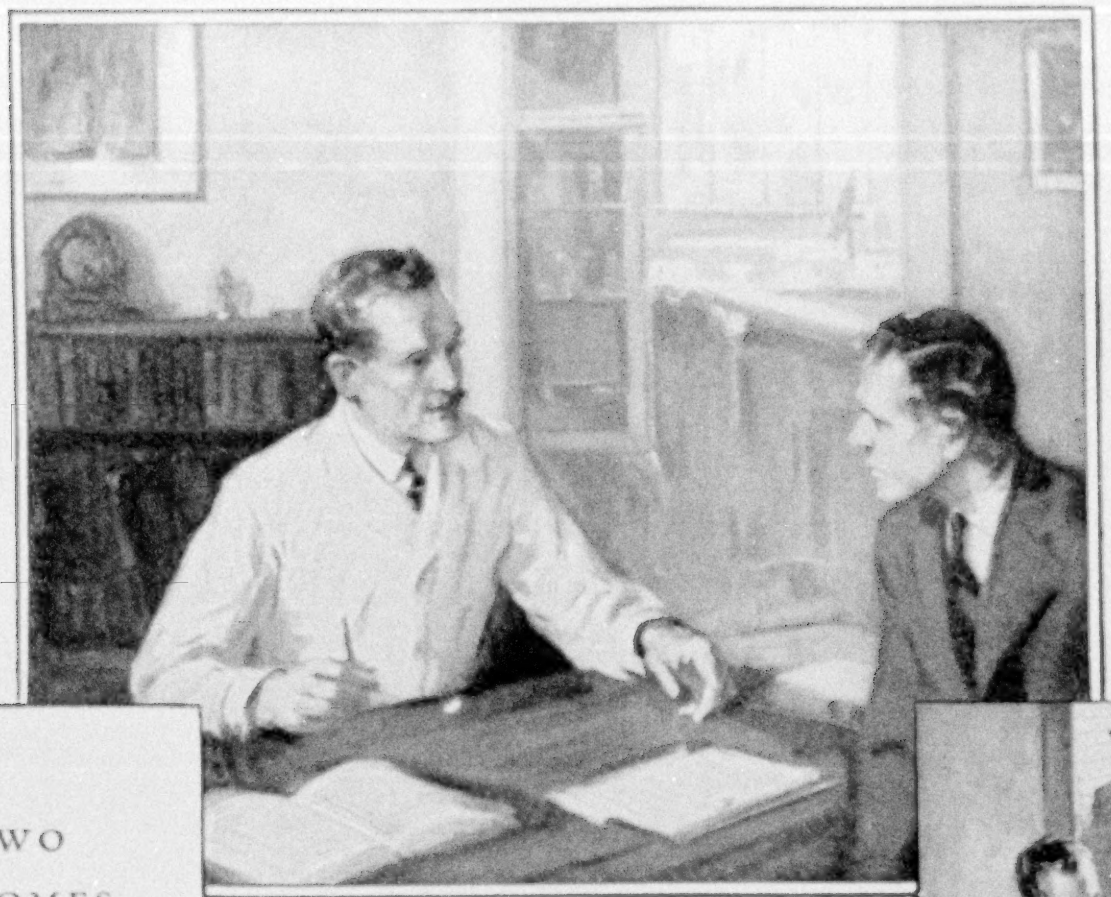

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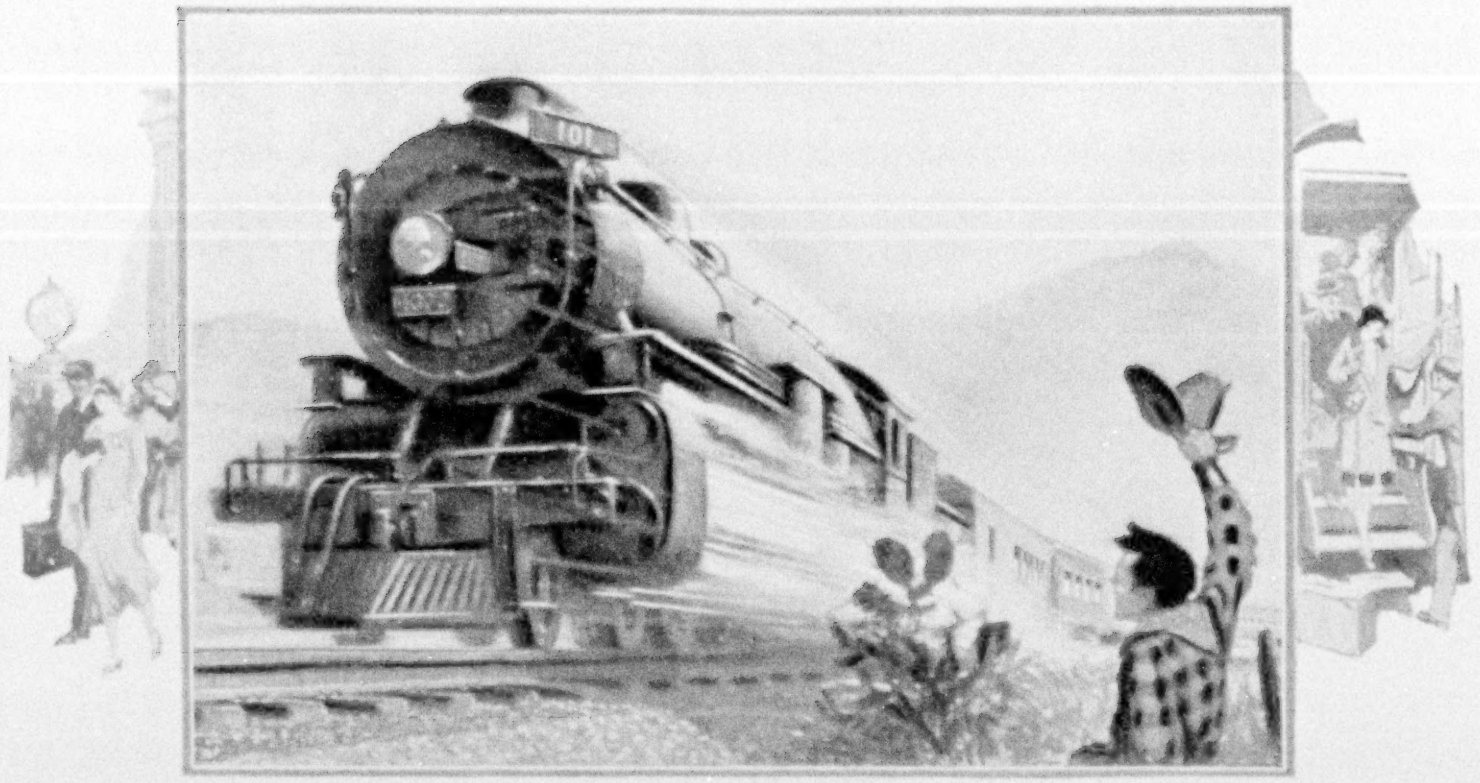

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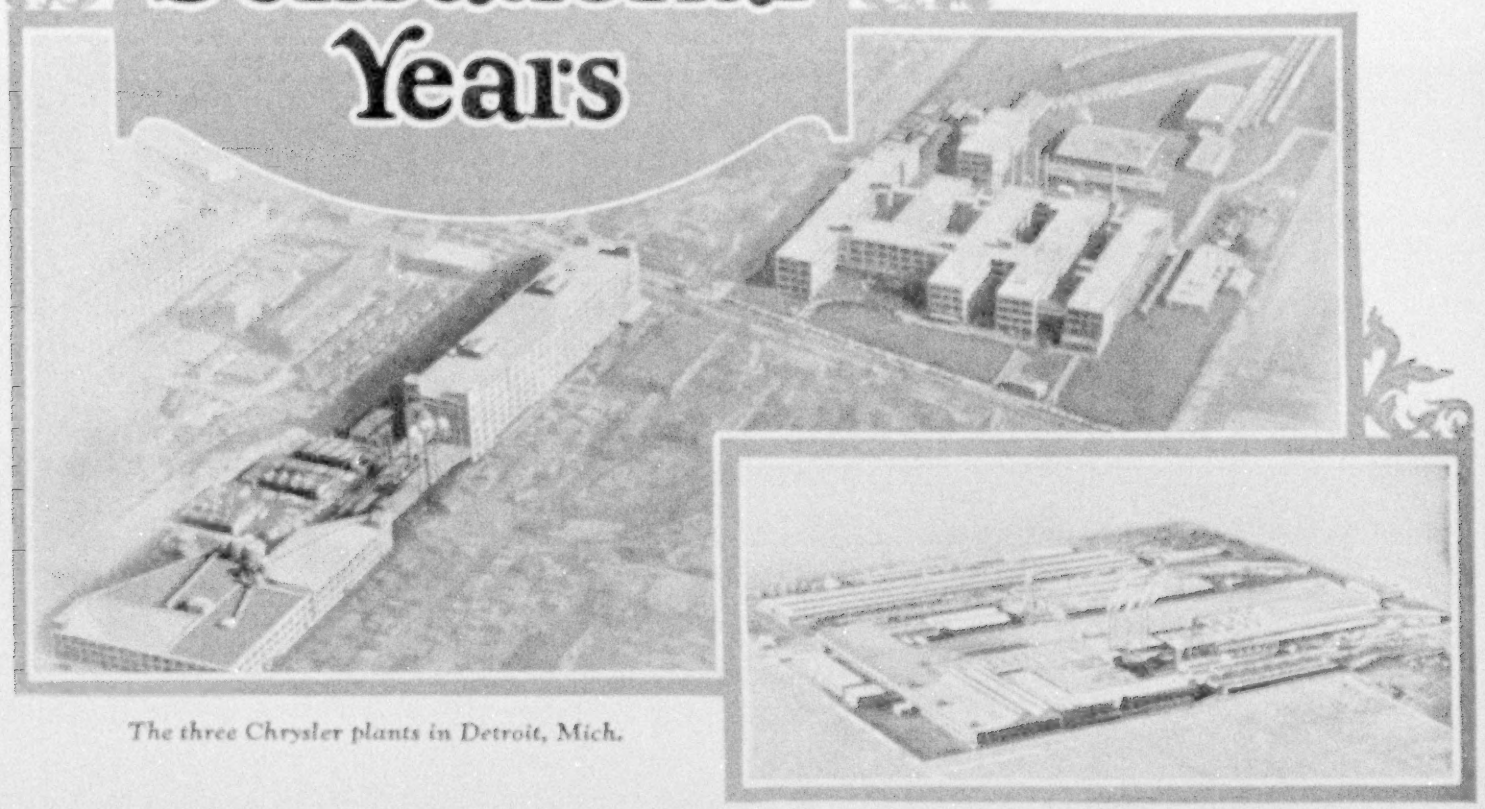
Two Sensational Years



The three Chrysler plants in Detroit, Mich.

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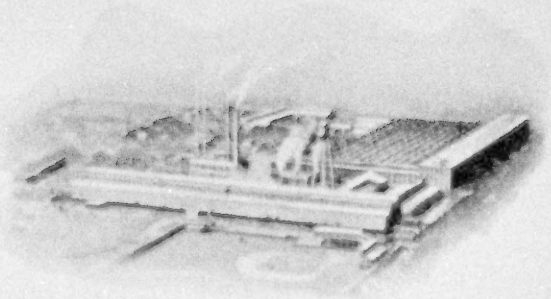
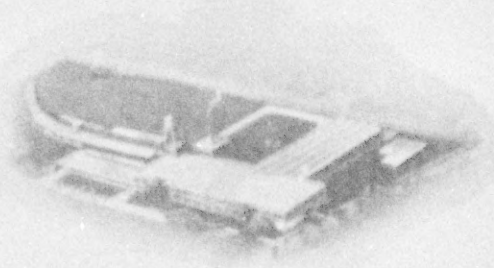


Dayton, Ohio



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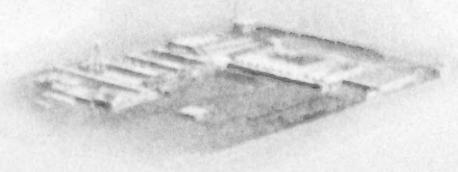

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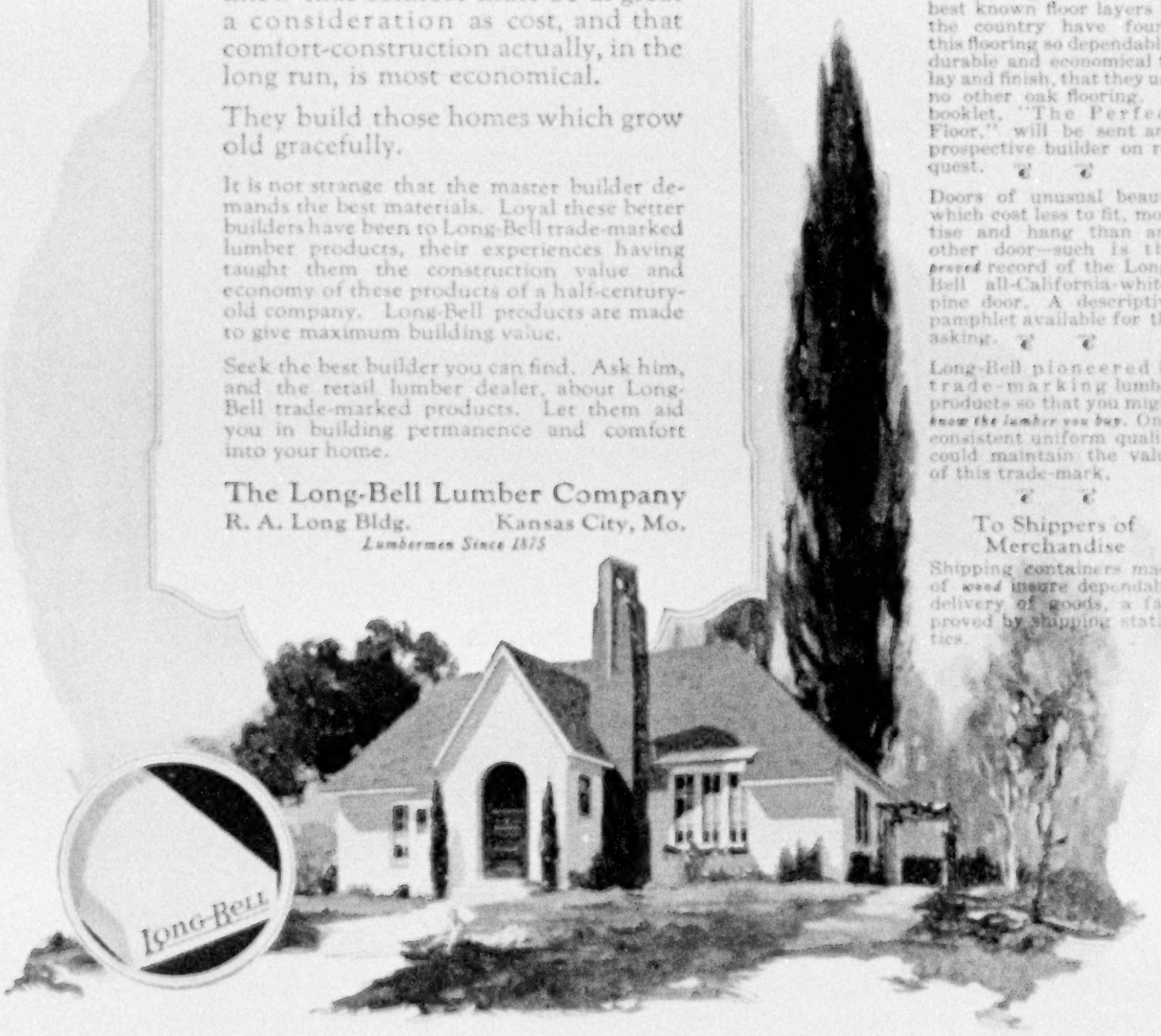

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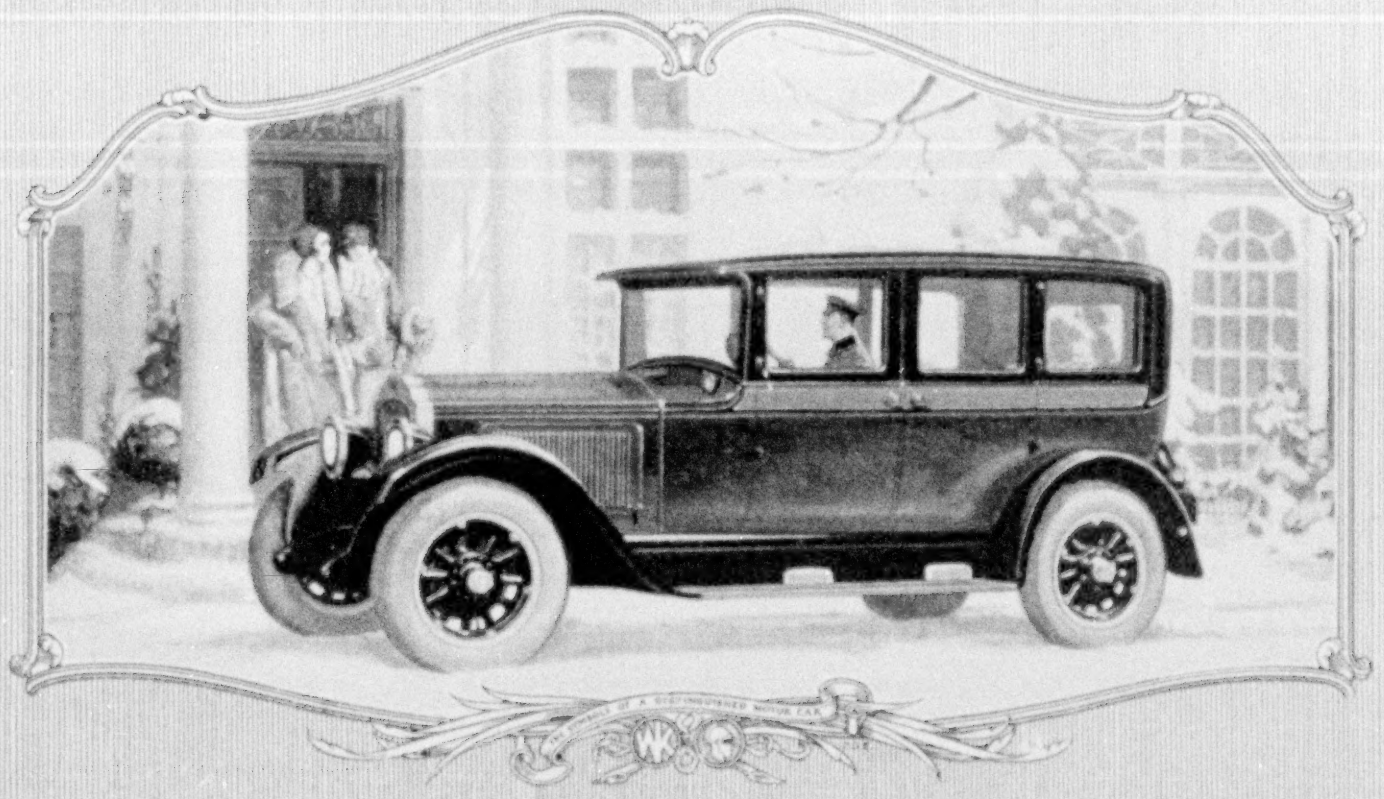

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"Why is it, Doctor," she asked, "that I don't seem able to clean the back surfaces of my teeth, and the spaces between? I try dutifully night and morning. Yet every time I come here, you find tartar and cavities."

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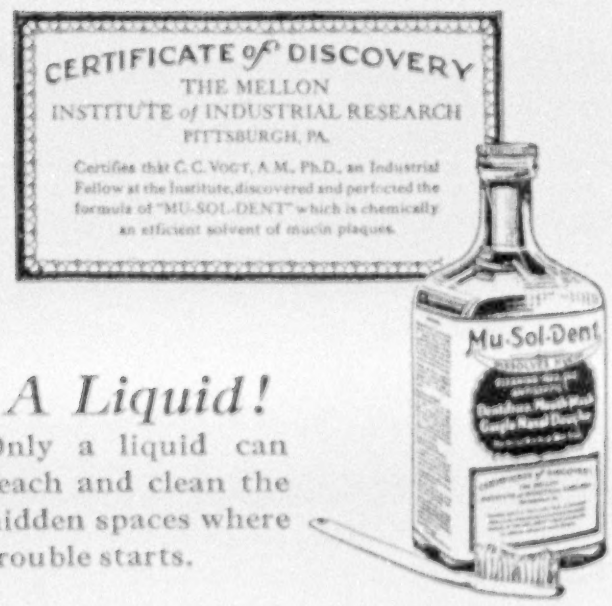
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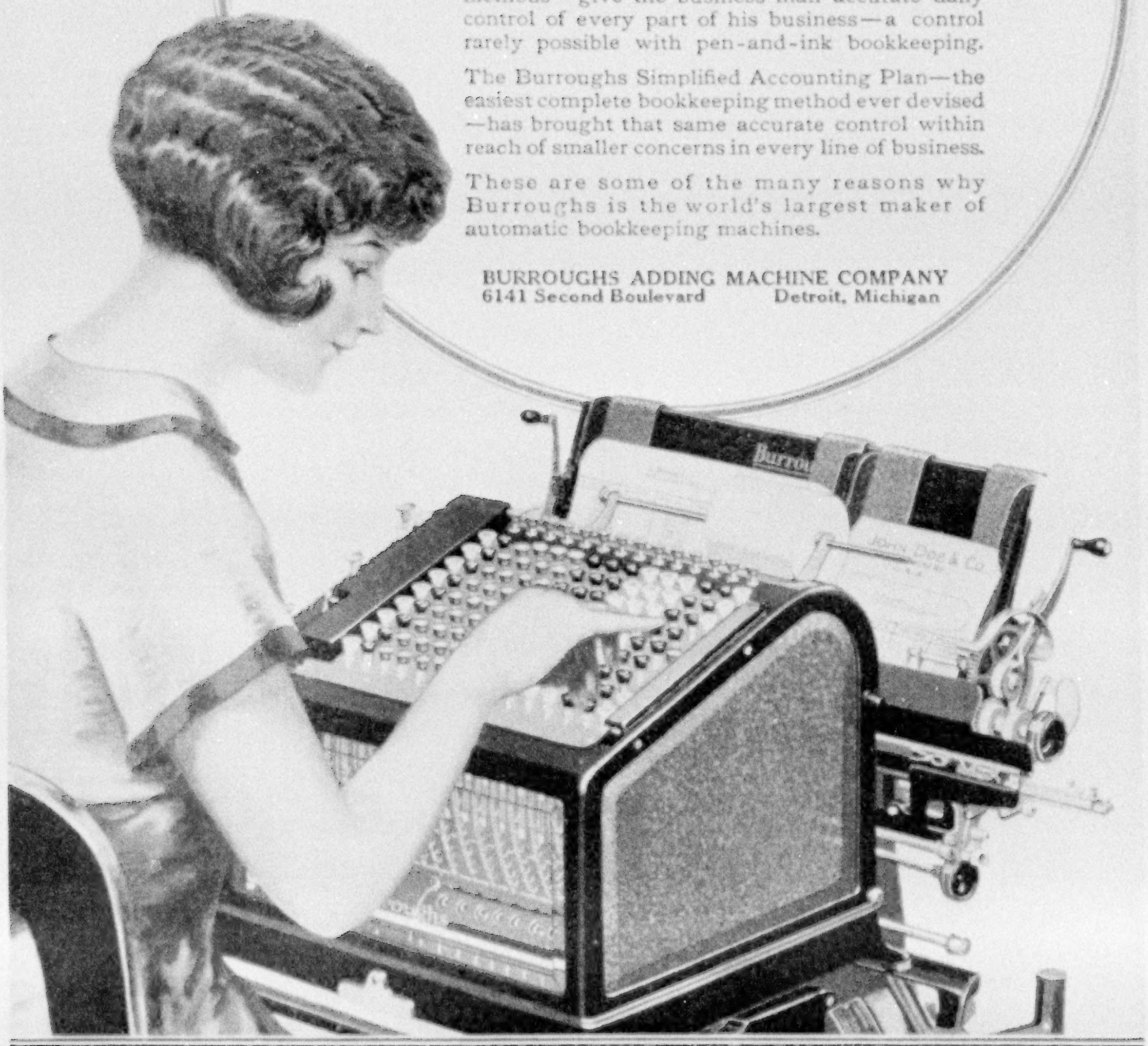
Automatic daily balances on all accounts—one of many outstanding features of Burroughs machine methods—give the business man accurate daily control of every part of his business—a control rarely possible with pen-and-ink bookkeeping.

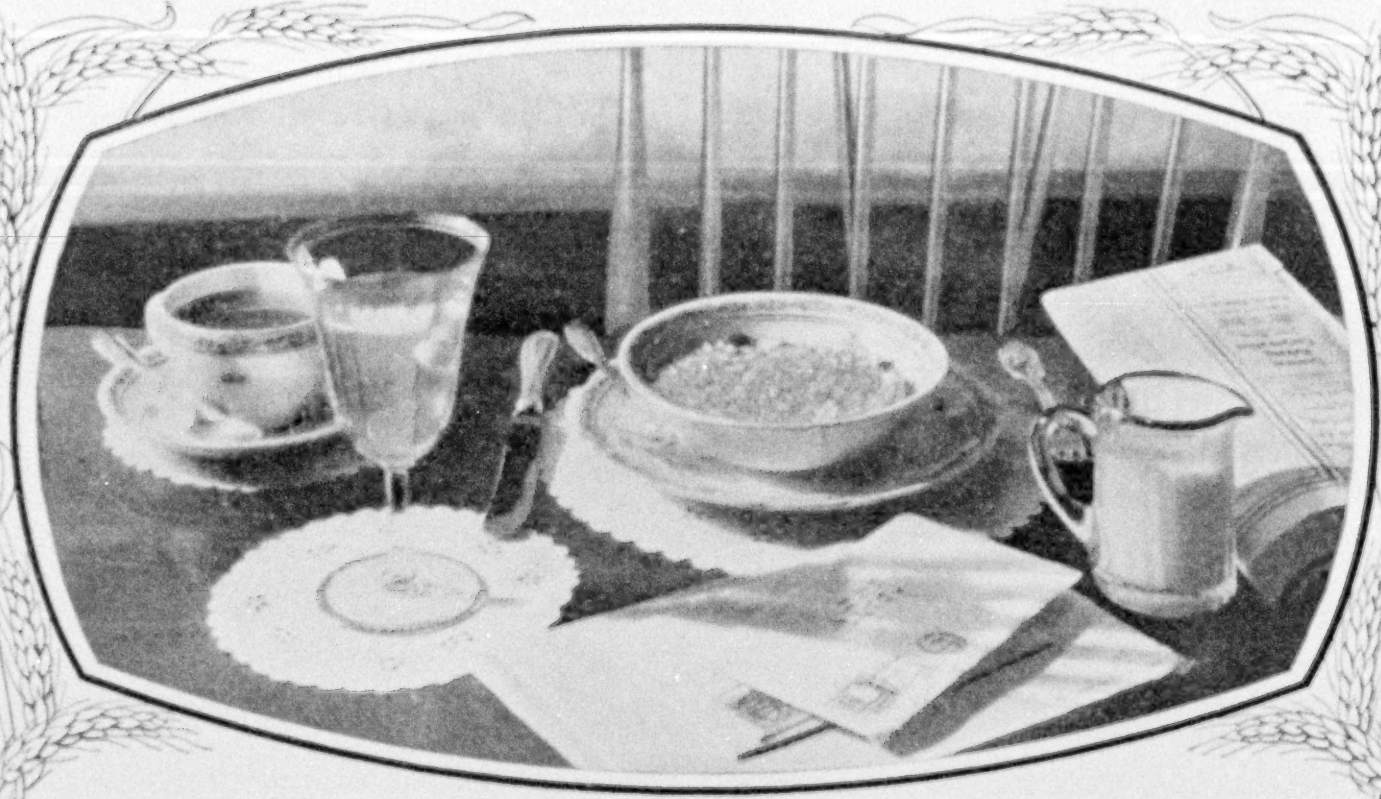
The Burroughs Simplified Accounting Plan—the easiest complete bookkeeping method ever devised—has brought that same accurate control within reach of smaller concerns in every line of business.

These are some of the many reasons why Burroughs is the world's largest maker of automatic bookkeeping machines.

BURROUGHS ADDING MACHINE COMPANY
6141 Second Boulevard Detroit, Michigan



ADDING • BOOKKEEPING • CALCULATING AND BILLING MACHINES



Men Welcome the Stimulation of a Steaming Breakfast Dish of

The New Pettijohn's

WHOLE WHEAT CEREAL

BRAN is only part of the whole wheat story. That's why New Pettijohn's is such a popular cereal.

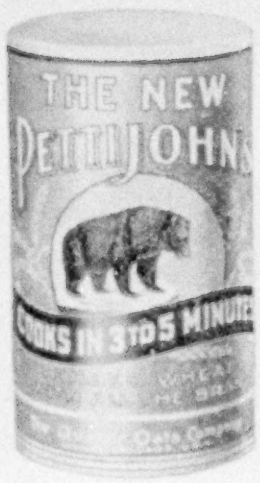
In New Pettijohn's you get *all* of the finest hard white Montana wheat—rich in mineral salts, protein and energy content. And *all* the natural bran.

The exclusive milling process retains the health-giving vitamins and brings out its distinctive flavor.

The New Pettijohn's is an appetizing, nourishing, satisfying food — a safe and efficient laxative.

It cooks in 3 to 5 minutes.

Try it for breakfast tomorrow and see how all the family enjoy it.



In brief

The New Pettijohn's is a deliciously palatable whole wheat food.

It contains all the Vitamins, Energy Content and Mineral Salts of the Wheat Berry and all the Natural Bran.

With milk it forms one of the best balanced food combinations known to dietitians. It cooks in 3 to 5 minutes.

The Quaker Oats Company

CHICAGO, U.S.A.

PITTSBURGH
Proof Products
Glass-Paint-Varnish-Brushes

The white fleet of the Northland Transportation Company — thirty-five luxurious cruiser buses — finished with Mimax.

REFINISH your car for economical, long-term durability and enduring beauty. MIMAX is the *perfected* finish combining all the marvelous endurance of the new-type finish with an exquisite polish!

Mimax
Automobile Finish

gives your car a glowing distinctive lustre, actually *improved by service.* Gasoline, grease, oil, battery acids, motor heat, hot water from the radiator or extremes of temperature leave no blemishes.

Mimax system is licensed only to responsible refinishing shops. *Send* back coupon for estimate of cost for refinishing your car, for booklet and color card.

For Manufactured Products

For furniture and a wide range of manufactured products Mimax systems offer large economies because of fast drying, increased production and the elimination of costly processes and storage space. Mimax systems installed under supervision of our Paint and Varnish Advisory Board. Write for information on your business stationery.

Research Laboratories
Dept. C
Pittsburgh Plate Glass Co.,
Milwaukee, Wis.

Please send me Mimax color card, informative booklet and approximate cost of refinishing my car by the Mimax system.

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Address .....

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Paint and Varnish Factories ..... Milwaukee, Wis., Newark, N. J., Portland, Ore., Los Angeles, Cal.

SIX-ROOM HOUSE NO. 635 — *Designed for Service Department, American Face Brick Association*

This is one of the 120 houses, embracing a wide variety of architectural styles and interior arrangements, shown in our "Face Brick Bungalow and Small House Plans."

Beautiful, Enduring Homes

BEAUTY, permanence and real economy combine to make the Face Brick house a sound investment and a satisfying home. The variety of colors, textures and bonding give an almost limitless scope for artistic effects in the wall surfaces. A lifetime is just a fair start for a well-built brick house. Its many savings in repairs, painting and depreciation soon wipe out the slight additional cost and make it the most economical house to own. These and other advantages of the Face Brick house are fully discussed in "The Story of Brick." Sent free.

Send for these booklets:

"The Story of Brick" is an attractive booklet with beautiful illustrations of modern homes, and discusses such matters as Comparative Costs, Basic Requirements in Building, The Extravagance of Cheapness, and kindred subjects. Sent free.

"Face Brick Bungalow and Small House Plans" embrace 120 designs of Face Brick bungalows and small houses. These houses are unusual and distinctive in design, economical to build, and convenient in floor plan. Issued in four booklets, showing 3 to 4-room houses, 5-room houses, 6-room houses, and 7 to 8-room houses. The entire set for one dollar; any one of the books, 25 cents. We can supply complete working drawings at nominal prices.

"The Home of Beauty" contains 50 designs of two-story six-room Face Brick houses, representing a wide variety of architectural styles and interior arrangements, selected from 350 designs submitted in a nation wide Architectural Competition. Sent for 50 cents. Complete working drawings for these houses at nominal cost.

"The Home Fires," a most attractive fireplace book, with many designs, gives full directions for fireplace construction. Sent for 25 cents.

Address, American Face Brick Association, 1737 Peoples Life Building, Chicago, Illinois.

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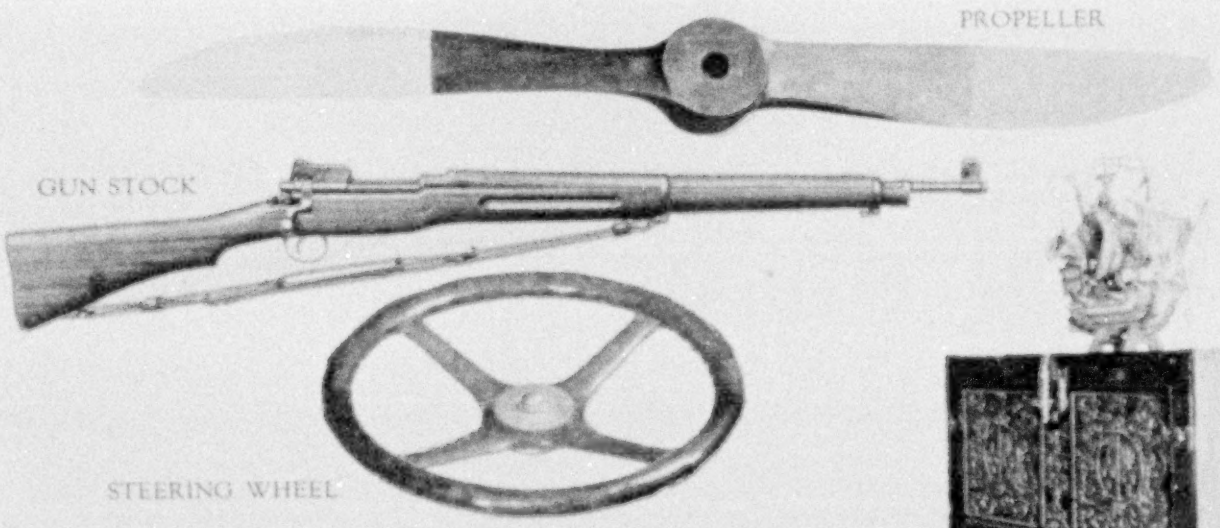
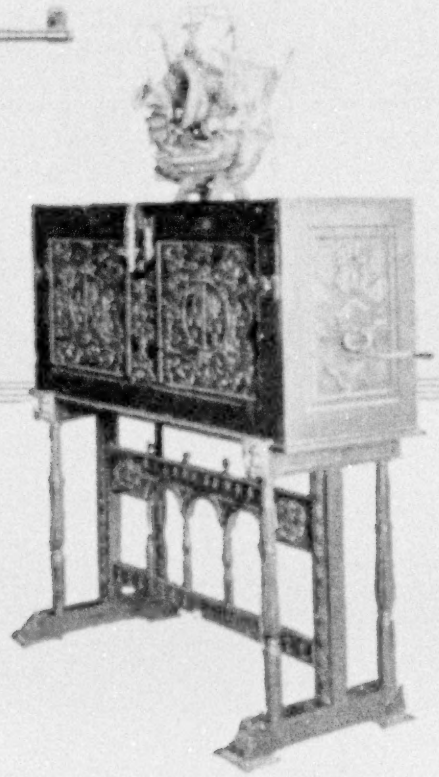
NO FURTHER ENGAGEMENTS FOR THIS QUARTET
CAN BE CONSIDERED FOR THIS SEASON

RITTENHOUSE SQUARE
PHILADELPHIA

Why AMERICAN WALNUT outlasts other furniture woods





In the Great War

How Stern the Demands on WALNUT

WHERE failure on the part of wood meant destruction and death . . . in aeroplane propellers . . . American Walnut was honored in its selection—specified for its stable, unchanging dependability.

For gunstocks, too, where slight warpages or shrinkages of the stocks would throw gun-barrels out of true . . . American Walnut was chosen.

For automobile steering wheels exposed to heat and cold, wind and rain . . . American Walnut is selected for its durable beauty, its fineness, its comfortableness. For, unlike metal steering wheels, walnut never grows cold and clammy in winter time. It is never sticky.

So it is to be expected that fine pieces of walnut furniture become heirlooms, handed down from generation to generation. Age only serves to mellow and enrichen the deep, tawny, lustrous browns of this handsome wood. What loveliness exceeds Nature's exquisite patterns fashioned in the graining of this choicest of all cabinet woods?

Truly—a wood you love to live with. An intimate wood, for panelling and woodwork as well as beautiful, durable furniture.

When you select your next furniture pieces make sure that at least all outside, exposed parts, where beauty and wear both count, are made of American Walnut.

AMERICAN WALNUT

"THIS IS THE AGE OF WALNUT"

Furniture lovers—send for "The Story of American Walnut." Architects, builders, those interested in the home—send for "American Walnut for Interior Woodwork and Panelling."

American Walnut Manufacturers' Association, Room 945, 616 S. Michigan Ave., Chicago, Ill.

"When someone harnesses sunlight – *then* I may give up my Oil-O-Matics"

JAMES OLIVER CURWOOD *measures the full comfort of a home*

YOU may think you really know comfort in your own home. But have you ever been in Curwood's? In his place tranquillity *must* be the watchword. You'd *like* it to be in yours.

But *no* home annoyed by a coal furnace could be a fit place to write. Or, as millions are learning, even a fit place to live!

For, once you have oil heat, you'll admire your own patience for ever having put up with coal. Ask Curwood!

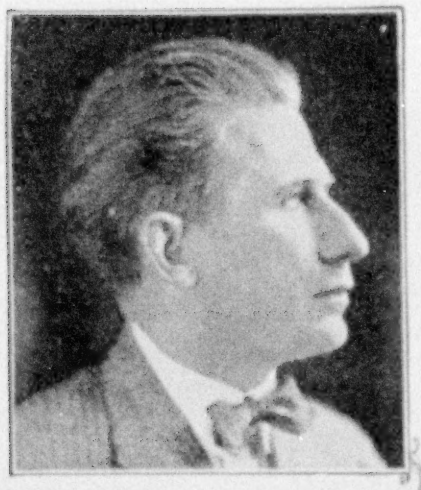


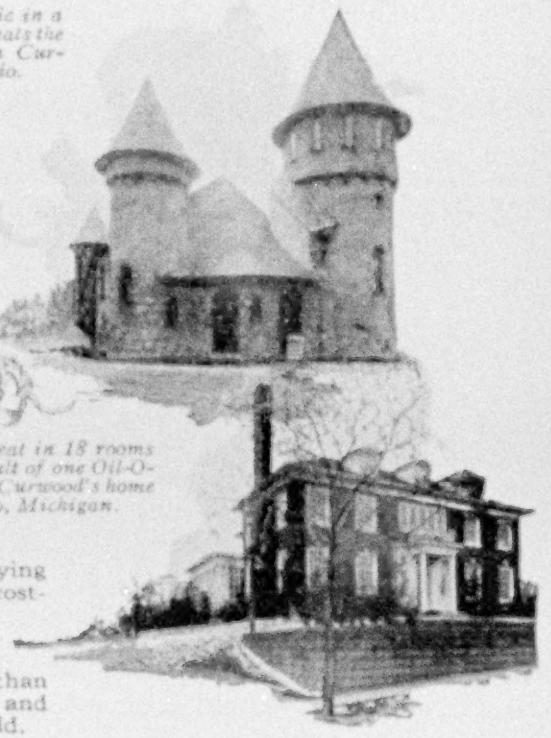
PHOTO BY BACHRACH

JAMES OLIVER CURWOOD

Creator of The Ancient Highway, *breathless romance of that intrepid angel, Antoinette St. Ives. Author of six years' best sellers.*

One Oil-O-Matic in a vapor system heats the seven rooms in Curwood's studio.

". . . sorrow and happiness became one between them, and precious secrets crept out of their hearts." —The Ancient Highway.



Perfect heat in 18 rooms is the result of one Oil-O-Matic in Curwood's home at Owosso, Michigan.

THE foibles of a furnace would be sure to clash with any temperament like Curwood's. Enjoy hardships in the big timber—yes. But in the solitude of his home or studio—never!

In this, he is not unlike any other man. Comfort is a matter of geography. Without physical comfort, home is just a wind-swept camp without the trout stream, without the rustle of the deer.

Temperature Never Varies

"Why people burn coal," Curwood exclaims, "when they can have such service as I get, is beyond me. It is like noonday on summer hilltops in my home when blizzards are snatching at the door.

"When I am deep in the north woods working on a novel, I know that Mrs. Curwood has no more concern over the heating problem than I have.

"In my studio, where interruptions of any kind would be disturbing, even the furnace man is banned. But my quarters never vary in temperature. Quiet is that of a prairie night."

Benefits That Repay You Tenfold

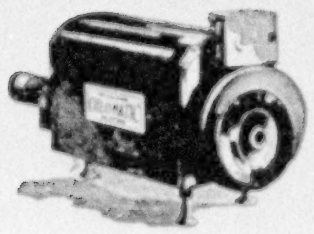
Is there any longer even the semblance of an excuse for your tolerating coal? Or spasmodic heat? The comfort and ease of a luxurious hotel is now available to you.

There is less excuse now than ever. For the longer you put off enjoying oilomatic heat, the more you are paying for it. Every day's delay may be costing you 10% more for heat. At least, that is the average saving for Oil-O-Matic over hard coal. But even where it runs higher than coal, the comfort, convenience and cleanliness repay the owner tenfold.

Operating Cost Is Lower

Oil-O-Matic is listed as standard by the Underwriters' Laboratories to burn fuel oil, as well as any of the lighter grades. Perhaps this distinction lies in this fact: Oil-O-Matic operates according to the four natural laws of oil combustion.

Fuel oil not only contains more heat units, but costs less per gallon than lighter oils. So a random purchase of an oil burner, means you are paying for an Oil-O-Matic without enjoying its benefits.



Curwood may or may not know how his burner works. Or what's under the hood. He doesn't have to look at it. He does know that there is no part inside the firebox and a special reason for it. He has confidence from experience that the safety devices will not fail him. For no part of Oil-O-Matic can work unless all are working right.

Pay as You Enjoy It

With such service as Curwood's being duplicated in so many thousands of homes, it is a cautious man, indeed, who would seek further encouragement to act promptly. There is a trained oilomatician in your community, however, who will gladly go into all the details with you. He welcomes those who prefer to buy out of income rather than capital.

The coupon below brings a rather novel book on the subject. "Heating Homes With Oil" is said to be the clearest exposition of this modern method of heating homes. It is sent without charge.

WILLIAMS
OIL-O-MATIC
HEATING

World's largest Producers of Automatic Oil Burners

Authorized dealers in every town and city of importance in the United States and Canada

Williams Oil-O-Matic Heating Corp.
Bloomington, Illinois NG2-26

Without obligation, please send me "Heating Homes With Oil," by return mail.

Name.....

Home Address.....

Our heating plant is:
☐ Steam ☐ Hot Water ☐ Warm Air

In New York your business may be a needle in a haystack

In the smaller cities, a business of high repute becomes known almost of itself. There, it is simply a case of a firm's reputation burning brightly on a hill. The light cannot be hid.

But in New York, there are so many lights. So many firms of high repute. You must do something more than have an office in New York. You must have an address which in itself is a business rating.

The Fifth Avenue Building is one of the landmarks of New York. 200 Fifth Avenue has been known to all the world since the Civil War. Here, for many years stood the famous Fifth Avenue Hotel, the meeting-place of statesmen, fashion and all people of importance the country over. This prestige is carried on by The Fifth Avenue Building.

The quiet dignity of a club pervades the atmosphere of this building. About you are pleasant people, friendly, at ease with each other and yet unobtrusive. Not everybody is admitted here. Before a firm is rented space in The Fifth Avenue Building, questions are asked about among that firm's business friends. This building, rightly, *selects* its tenants.

Offices in this building place you at the commercial heart of New York. Midway between the two rivers, midway between Central Park and the Battery, The Fifth Avenue Building through three subway lines, an elevated and busses is easily accessible to the whole city.

When you are in New York, come to see us. We shall be pleased to show you about.

The FIFTH AVENUE BUILDING

Broadway and Fifth Avenue
at Madison Square

"More than an office building"

DODGE BROTHERS, INC.

Announce

Tremendous price reductions and important improvements for their complete line of motor vehicles

New Tables

to brighten your living room

YOU can do wonders with those clever new Imperial Tables now at your furniture store.

No end of smart ideas, beautiful woods and lovely decorations.

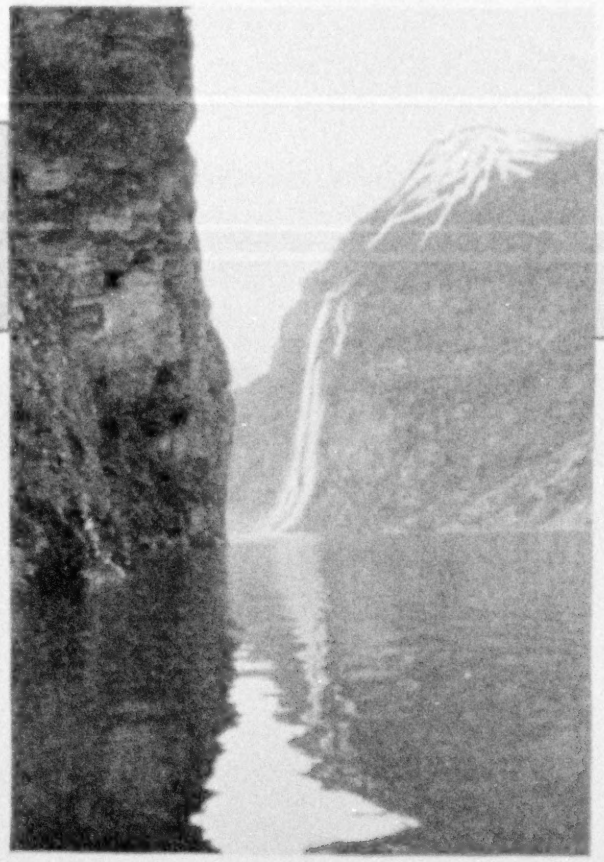
And such surprising values—possible only because we are the world's greatest table makers.

To buy wisely, always look for the Imperial trademark, when looking at tables.

IMPERIAL FURNITURE CO.
Grand Rapids, Michigan

"Heirlooms of Tomorrow" is a fine book on home enrichment sent free to those who write Dept. G.

Imperial Tables



"Marvelous!"
is one of the adjectives you constantly hear and will use when traveling in

Norway
THE LAND OF THE MIDNIGHT SUN

And if there is a land which may fairly be spoken of in superlatives, it is Norway. Natural marvels—sublime, poetic, entrancing—abound, while man-made marvels—seemingly impossible road constructions, phenomenal railway engineering, incredible ship channels, extraordinary canals and locks—prove the genius of man greater than the stubborn resistance of granite, ice and tides.

Won't you let us tell you more about the magnificent Land of the Vikings?

We have nothing to sell and accept no commissions; all our services are free, and with no strings attached.

May we assist you with your itinerary? We shall, if you desire, also to some extent include the other Scandinavian countries or any other European lands.

Norwegian Government Railways Travel Bureau

342 Madison Avenue
New York, N.Y.-U.S.A.

"... and our best silver is gone too!"

Burglars . . skilled professionals . . swift, sure, silent. . . The whole house ransacked . . in a few unguarded hours. . . Silver, jewelry, even wearing apparel. . . Gone—never to be recovered! . . What comfort their insurance gave this startled young couple!

Every year, millions of dollars in property become the loot of clever criminals. A few families are able to stand their losses. To the great majority a single daring raid robs them of precious personal and household articles which can only be replaced over a long period of years. Instances are not lacking in which the entire contents of a house have been stolen while the occupants were away for only a brief time.

If you have valuable articles which readily may be stolen, you are running constant and unnecessary risk of loss. Why should you assume the hazards of personal responsibility when, for only a few cents a day, you can be protected absolutely against any loss from theft?

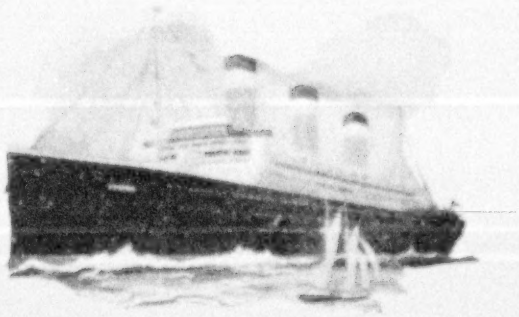
See the Ætna-izer in your community! Have him explain the Ætna Burglary policy to you in detail. Let him show you how it can be extended to protect you and all the members of your immediate family against even personal hold-up.

The Ætna-izer is a man worth knowing! He represents the strongest multiple-line insurance organization in the world. He can give you sound insurance advice and unsurpassed protection against virtually every form of risk—Life Insurance in all its branches, Accident and Health, Automobile, Liability, Compensation, Burglary, Fire and Marine, Fidelity and Surety Bonds.

Ætna-ize! According to your needs! As you prosper, and as your obligations increase! Make our representative in your community your trusted adviser.

ÆTNA-IZE

ÆTNA LIFE INSURANCE COMPANY
Ætna Casualty and Surety Co. Standard Fire
AND AFFILIATED COMPANIES
Insurance Co. Automobile Insurance Co., of Hartford, Conn.



The best cuisine on the North Atlantic

The finest hotel service afloat, dollar for dollar, is yours when you cross the Atlantic on any one of these splendid United States Lines ships:—

S. S. George Washington

This giant liner is noted for speed, steadiness and beauty. Its distinctive American home atmosphere has endeared it to thousands. Smoothly running elevators, Colonial windows, restful and refined furnishings. First Class rates $231* and up; Second Class $136.25 up; and the ever popular Tourist III Cabins from $97.50 up.

"President Harding" and "President Roosevelt"

For $209* and up you can travel First Class on either of these ships which have a personality all their own. Every stateroom is *an outside room* equipped with real beds and period furniture. Tourist III Cabins $95 and up.

The "America" and "Republic"

These two of the largest "cabin" (one-class) ships on the seven seas are extremely popular—they offer real luxury at moderate cost. You will be amazed at the accommodations offered for $140 up on the Republic and $145 up on the America. Tourist III Cabins $95 up.

S. S. Leviathan—America's pride

The world's most famous ship, the flagship of the fleet, greatest of them all in size. First Class accommodations priced from $290* up will give you the thrill of a lifetime—you will live like a prince. Tremendous decks, Pompeian Swimming Pool, Winter Garden, breakfast and tea rooms, gymnasium, Louis XIV Salon, noted chefs to cater for you. Second Class Cabins from $147.50 up and Tourist III Cabins $102.50 and up.

* * * *

Travel on your ships, owned and operated by the U. S. Government to give you the high type of travel luxury to which Americans are accustomed. Go to your steamship ticket agent—get his advice about the ship best suited to your plans and purse. Or write to the address below.

*Summer Rates effective April 1. Present Winter Rates are lower.

United States Lines

Operating the LEVIATHAN, GEORGE WASHINGTON, PRESIDENT HARDING, PRESIDENT ROOSEVELT, AMERICA and REPUBLIC *to Europe.*

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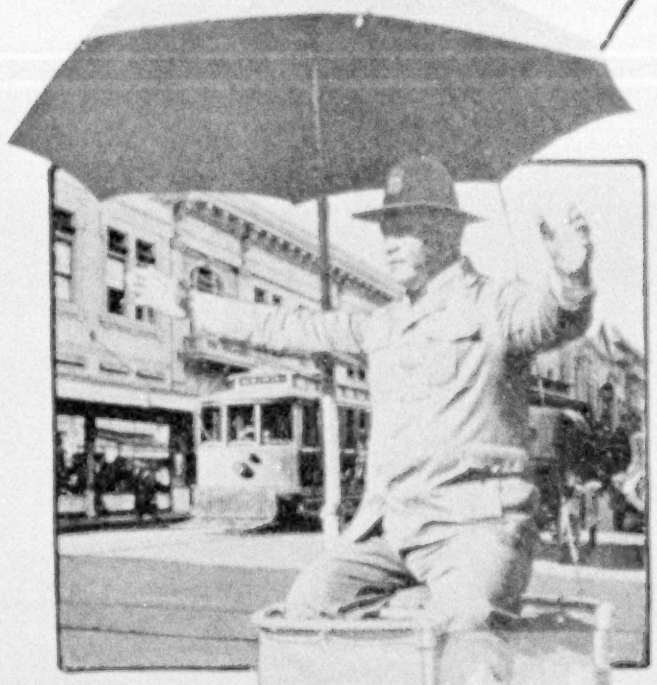


Where Life Moves in Restful Tempo

Dawn. Over the ship's bow dead ahead rises the island of Oahu, misty and purple in the early light. Close at hand flying-fish skim the waves. A sampan dawdles by, dungaree-clad figure at the tiller.

Hawaii, Uncle Sam's island territory, where everybody, including the cops, takes life comfortably. Winter, and hibiscus in full bloom. Diving boys, flower-laden lei girls, "Aloha Oe" by the Hawaiian Band.

Business men draw new dividends—rest and relaxation—in Waikiki's shoals. Luaus (feasts) in palm-thatched houses; 7-course dinners (with fresh papaya appetizer) on smart hotel lanais (verandas). You hear your own language and are made comfortable by all your accustomed home conveniences.

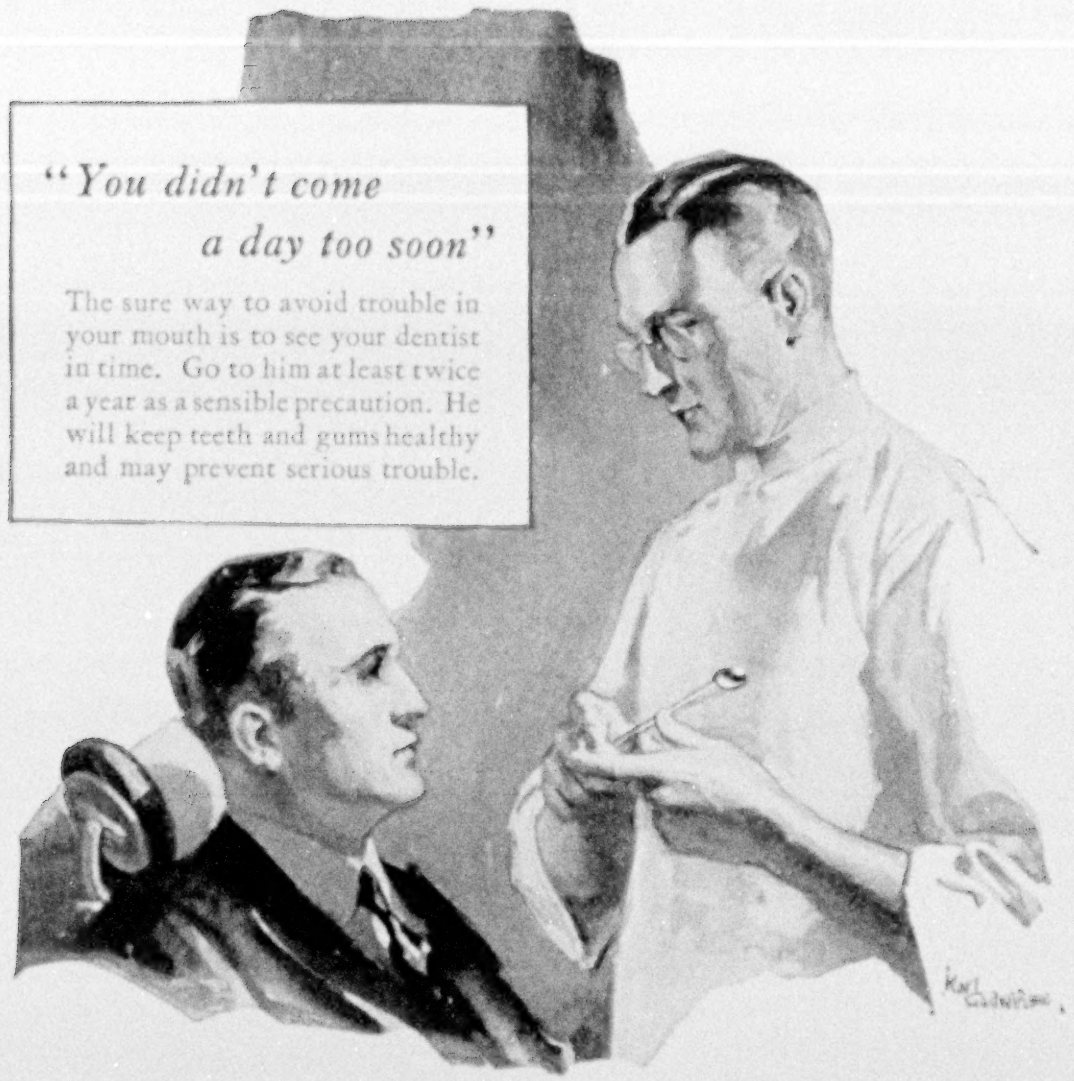
Easy Trip to Make

Pack the clothes you wore last summer, pick up your golf bag—and come. It's *that* easy! Your nearest railway, steamship or travel agent will book you to Honolulu. You can make the round trip direct from San Francisco, Los Angeles, Seattle, Vancouver or Victoria, B. C., in 3 or 4 weeks (5 to 8 days each way) for as little as $300 to $400, including first-class steamer accommodations, hotels and sightseeing. This gives a week or two in Hawaii—but you'll want to stay longer, so arrange in advance for all the time you can spare.

On all the larger islands, good golf links, tennis courts, motor roads, first-class hotels. Swimming, surfing, deep-sea fishing, mountain hiking the year round. Volcanic wonders in Hawaii National Park.

Write NOW for full information on that Hawaiian trip. A brochure printed in colors with pictures awaits your inquiry.

HAWAII TOURIST BUREAU
212 Monadnock Bldg., San Francisco
or to 341 Fort St., Honolulu, Hawaii, U. S. A.


"You didn't come
a day too soon"
The sure way to avoid trouble in your mouth is to see your dentist in time. Go to him at least twice a year as a sensible precaution. He will keep teeth and gums healthy and may prevent serious trouble.

4 out of 5 *see him too late*

Don't let carelessness or a false feeling of security give dangerous pyorrhea a chance to fasten itself in your mouth. Four out of five have this dread infection at forty, and many younger, according to dental statistics.

A little foresight will keep you among the fortunate who escape. At least every six months let your dentist go over your mouth carefully to detect signs of gum infection and start now to brush night and morning with Forhan's for the Gums.

The entire family should brush with Forhan's. It's a pleasant tasting dentifrice that firms the gums and keeps them pink and healthy. It gives the teeth a thorough cleansing and keeps them white and clean.

You can't begin too soon using Forhan's. Delay may exact a heavy toll. It's unwise to take chances with pyorrhea. Get your tube of Forhan's today. All druggists: 35c and 60c in tubes.

Formula of R. J. Forhan, D.D.S.
Forhan Company, New York

Forhan's
FOR THE GUMS

MORE THAN A TOOTH PASTE · *IT HELPS TO CHECK PYORRHEA*

CUNARD CRUISES to the West Indies

On the s.s.
"CALIFORNIA
—a magnificent new steamer, fitted with the new thermo tank ventilation system which supplies a current of fresh air—under the passenger's own control—to every stateroom, an innovation of greatest comfort-value, when cruising in the tropics. Electric fans in every room.

DEPARTURES FROM NEW YORK

First Sailing . . . Jan. 23, 1926

Second Sailing . . . Feb. 25, 1926

30 days of health-giving, enjoyable, interesting cruising; itinerary covers *Nassau, Havana, Port au Prince, Kingston, Colon, Cartagena, La Guayra, Port of Spain, Barbados, Martinique, Fort de France, St. Pierre, St. Thomas, San Juan, Bermuda.* Comprehensive sightseeing tours ashore under the direction of Thos. Cook & Son.

Cunard Service Equipment and Cuisine

—The World's recognized standard of Ocean Travel.

Make your reservations promptly.

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25 Broadway, New York, or Branches and Agencies

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Molloy-Made Geographic Covers offer a distinctive protection for your fascinating Geographics.

Made of attractive leather-cloth, embossed in brown and gold. All the richness of leather with a longer life—a tribute to your library.

Bind them in as they are received—no sewing nor gluing. Each cover holds six issues. Years 1910 to 1926 now ready. $2.00 each or $3.65 per pair. Satisfaction guaranteed. State years and send check with your order.

THE DAVID J. MOLLOY COMPANY
2863 North Western Avenue
Chicago, Illinois

Milton's Cottage, Chalfont, St. Giles

SEE

England of the Olden Times

If you land at LIVERPOOL, book to LONDON by the Royal Shakespeare Route of the

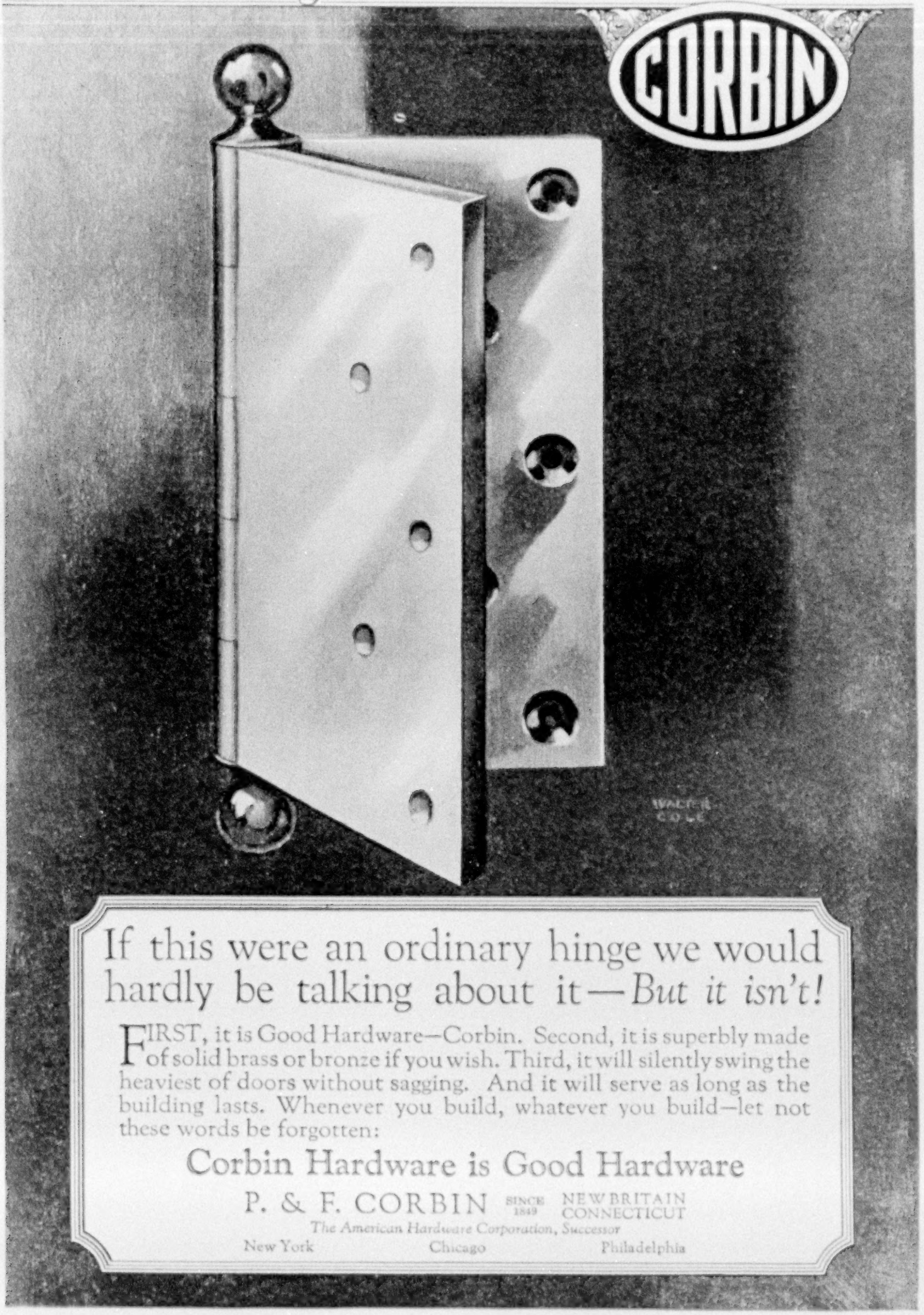
Great Western Railway

Tickets between Liverpool and London by this route give you stop-over privileges at Chester, Shrewsbury, Birmingham, Warwick, Stratford-on-Avon, Leamington, Oxford, Windsor, Eton, etc.

For further information and literature, apply to

R. H. LEA, Great Western Ry. of England
Dept. N, 315 FIFTH AVE., NEW YORK

Good Buildings Deserve Good Hardware



If this were an ordinary hinge we would hardly be talking about it—*But it isn't!*

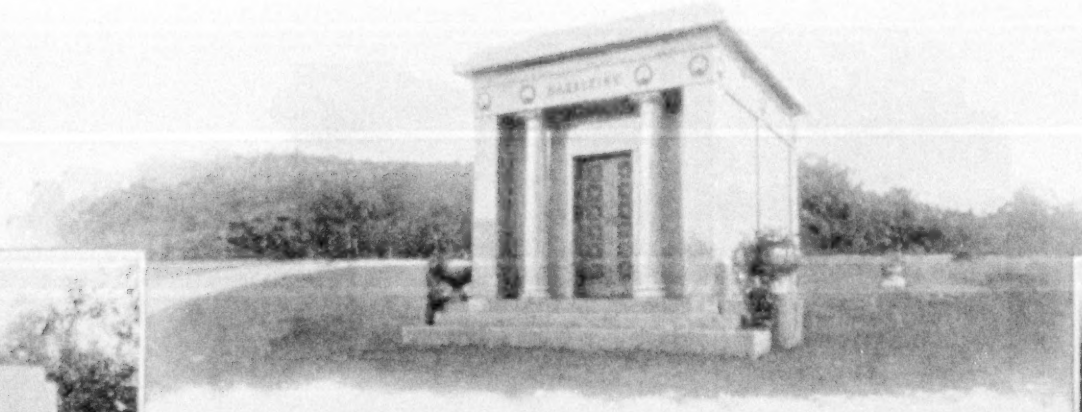
FIRST, it is Good Hardware—Corbin. Second, it is superbly made of solid brass or bronze if you wish. Third, it will silently swing the heaviest of doors without sagging. And it will serve as long as the building lasts. Whenever you build, whatever you build—let not these words be forgotten:

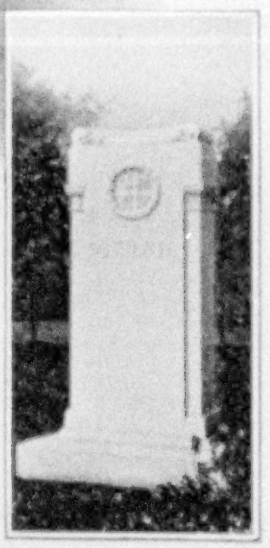
Corbin Hardware is Good Hardware

P. & F. CORBIN SINCE 1849 NEW BRITAIN CONNECTICUT

The American Hardware Corporation, Successor

New York Chicago Philadelphia





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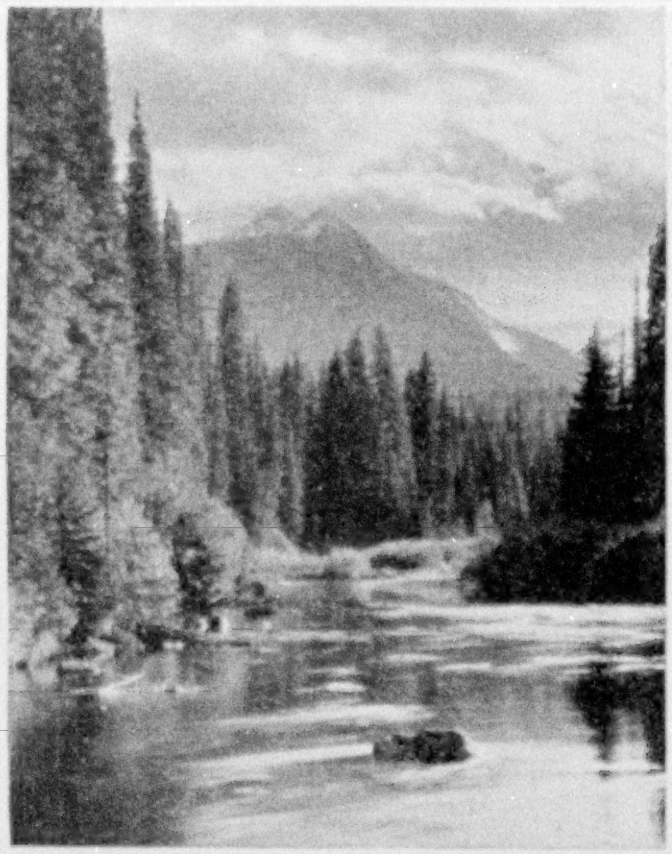

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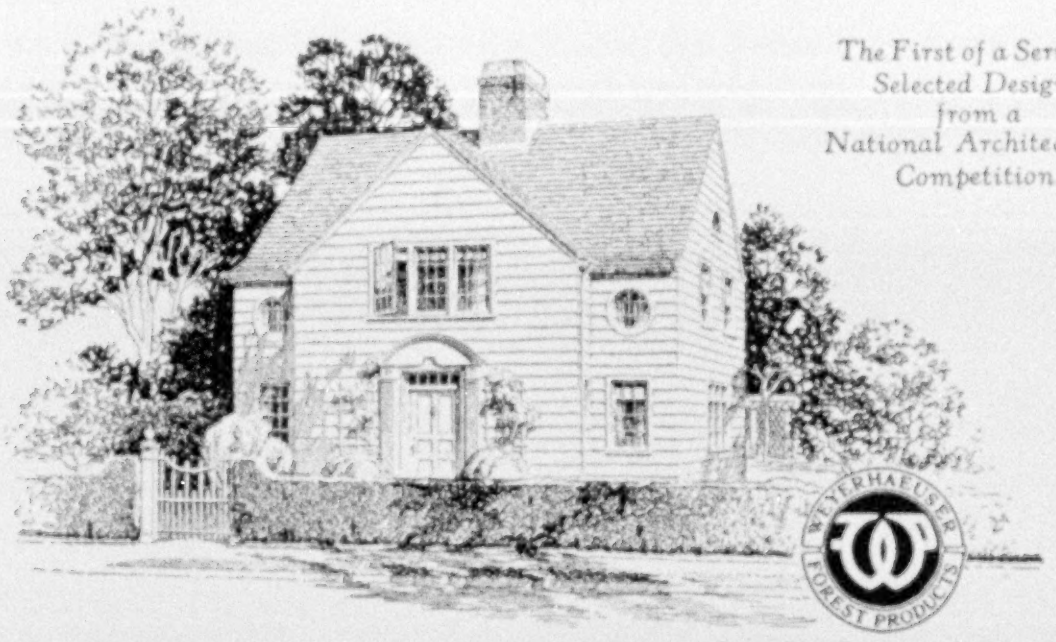

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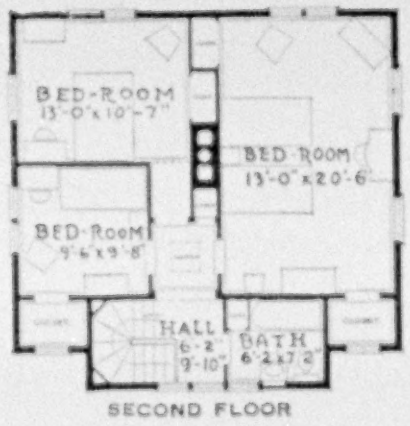

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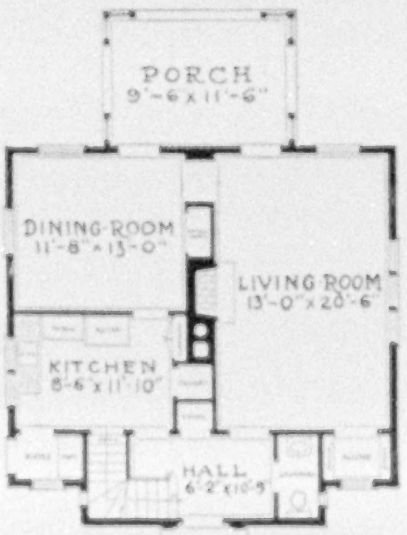

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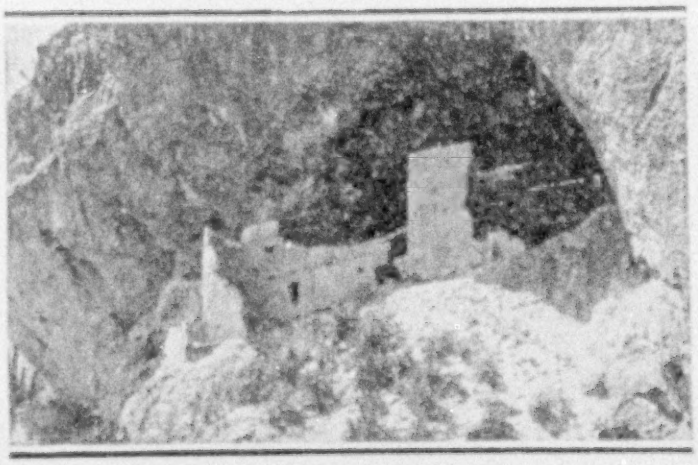

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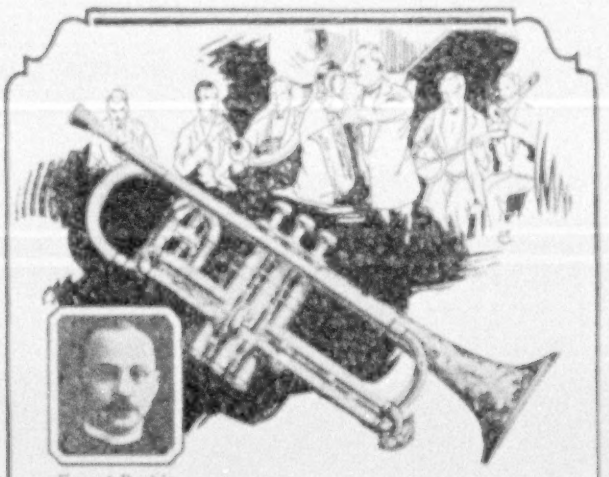

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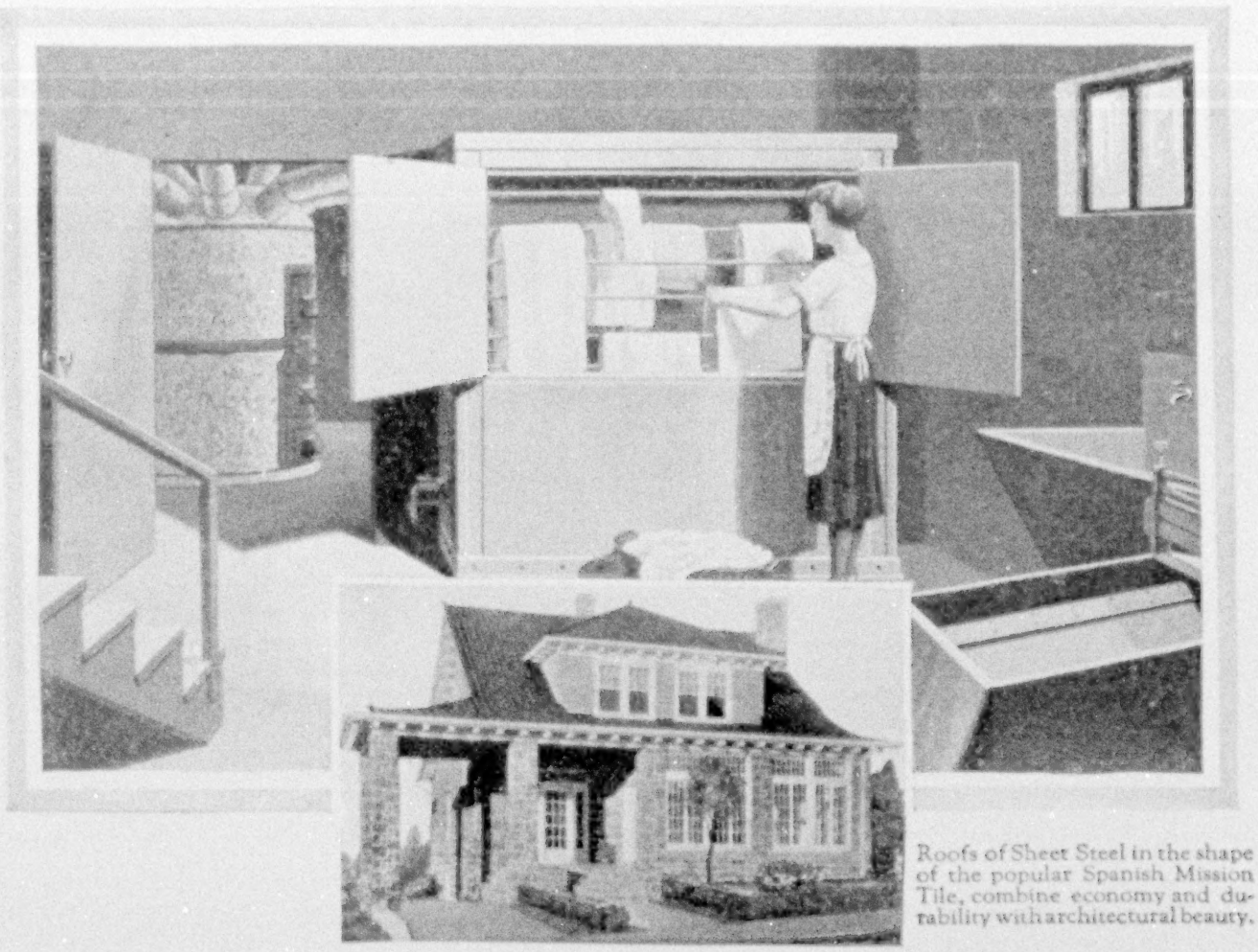

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The Best Homes Are Using Sheet Steel *for* Construction, Furniture and Equipment

For example, home owners who appreciate convenience and economy are installing clothes dryers made of Sheet Steel. These modern appliances make home laundry work independent of the weather. Modern warm air heating systems, now used in so many fine homes, are constructed almost entirely of Sheet Steel.

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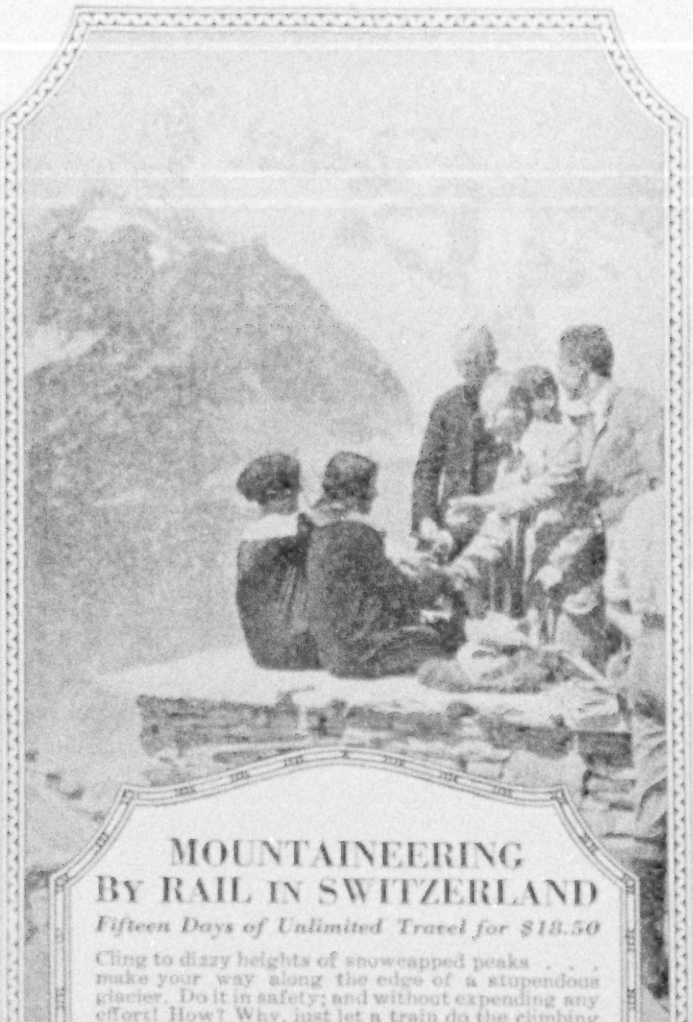

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GENEVA, on its classical lake, combines beauty, wealth and intellect. It is attractive to those seeking rest; University vacation courses, too, are to be had in this educational and international centre as well as wonderful excursions and many opportunities for all sports including golf.

BERNE, the Swiss Capital. Typical and picturesque. It is in the midst of magnificent scenery . . . with a marvelous view of the Bernese Alps. Nowhere else is Swiss life, in town or country, more vividly portrayed than here.

INTERLAKEN, beauty spot of the Bernese Oberland, is on the lovely lakes of Thun and Brienz. Its beautiful Casino is an invitation to tarry before starting up the Jungfrau Railway, or any of the nearby railways to Schynige Platte and the mountain resorts of Grindelwald, Murren and Wengen, or Gstaad and Meiringen.

MONTREUX, CLION, CAUX, LES AVANTS, ROCHERS and DE MAYE lie beautiful as a dream on Lake Leman. Golf and all the other sports are to be had. A motorbus leads to Great St. Bernard. The electric M. O. B. Railway, with its luxurious dining and observation cars goes direct to the Bernese Oberland.

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LUGANO, a paradise of flowers and perennial sunshine, is the Swiss-Italian lake district. It offers all sports, including golf, and an unforgettable trip on the electrified St. Gothard Line famed for its scenic grandeur.

ZURICH is the country's metropolis . . . the portal to the Grisons of the one hundred and fifty valleys including the famous Alpine section, the Engadine. With its unique climate and powerful solar radiation, it affects many cures. Golf and all sports have made St. Moritz, Davos, Arosa, Pontresina and other resorts famous.

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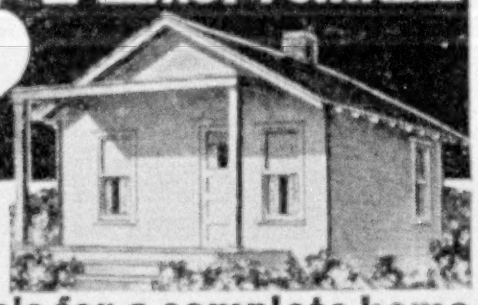

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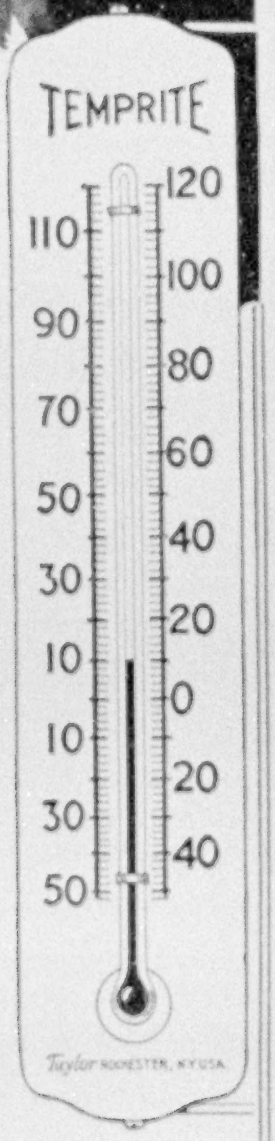

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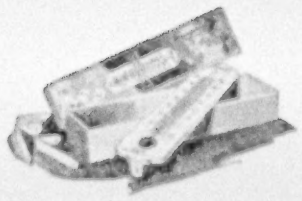

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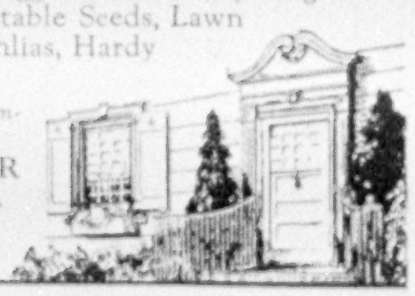

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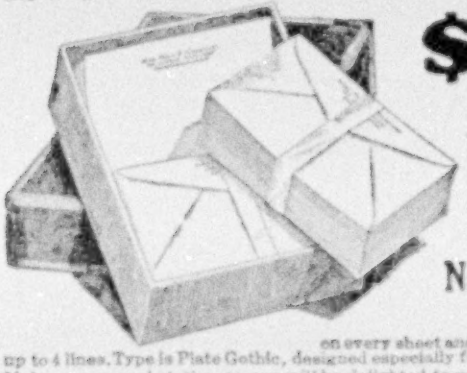

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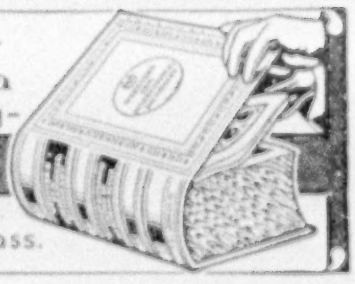

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Strength . .

How man builds for permanence with red-leaded steel

TOUGH, flawless steel that safeguards the lives of thousands—who would think that it needs protection itself? But it does. Engineers, railroad men, ship-owners, never build with steel alone, strong as it is. They know they must provide steel with the one quality it lacks—the ability to ward off rust.

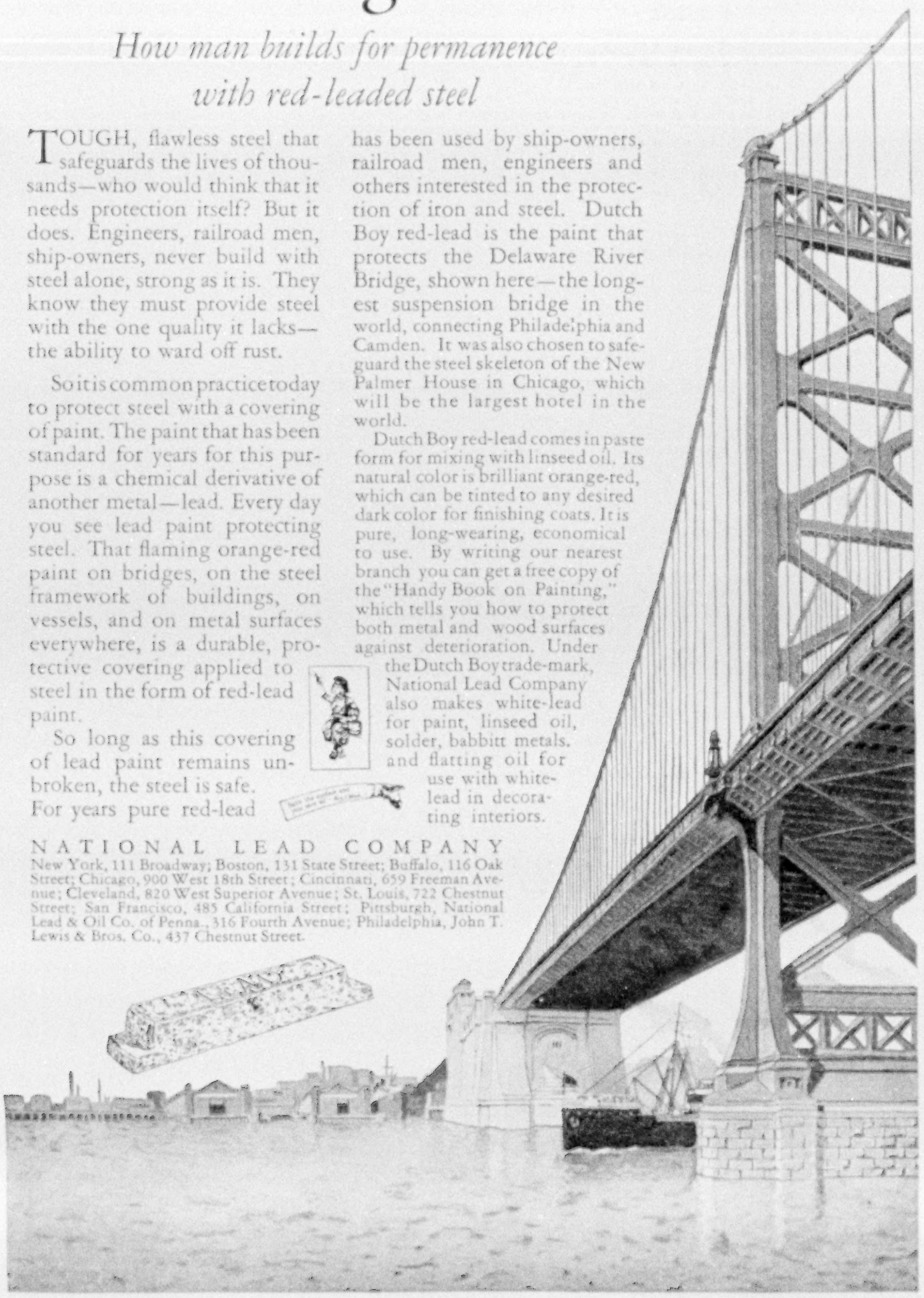
So it is common practice today to protect steel with a covering of paint. The paint that has been standard for years for this purpose is a chemical derivative of another metal—lead. Every day you see lead paint protecting steel. That flaming orange-red paint on bridges, on the steel framework of buildings, on vessels, and on metal surfaces everywhere, is a durable, protective covering applied to steel in the form of red-lead paint.

So long as this covering of lead paint remains unbroken, the steel is safe. For years pure red-lead has been used by ship-owners, railroad men, engineers and others interested in the protection of iron and steel. Dutch Boy red-lead is the paint that protects the Delaware River Bridge, shown here—the longest suspension bridge in the world, connecting Philadelphia and Camden. It was also chosen to safeguard the steel skeleton of the New Palmer House in Chicago, which will be the largest hotel in the world.

Dutch Boy red-lead comes in paste form for mixing with linseed oil. Its natural color is brilliant orange-red, which can be tinted to any desired dark color for finishing coats. It is pure, long-wearing, economical to use. By writing our nearest branch you can get a free copy of the "Handy Book on Painting," which tells you how to protect both metal and wood surfaces against deterioration. Under the Dutch Boy trade-mark, National Lead Company also makes white-lead for paint, linseed oil, solder, babbitt metals, and flatting oil for use with white-lead in decorating interiors.

NATIONAL LEAD COMPANY

New York, 111 Broadway; Boston, 131 State Street; Buffalo, 116 Oak Street; Chicago, 900 West 18th Street; Cincinnati, 659 Freeman Avenue; Cleveland, 820 West Superior Avenue; St. Louis, 722 Chestnut Street; San Francisco, 485 California Street; Pittsburgh, National Lead & Oil Co. of Penna., 316 Fourth Avenue; Philadelphia, John T. Lewis & Bros. Co., 437 Chestnut Street.



EUROPE

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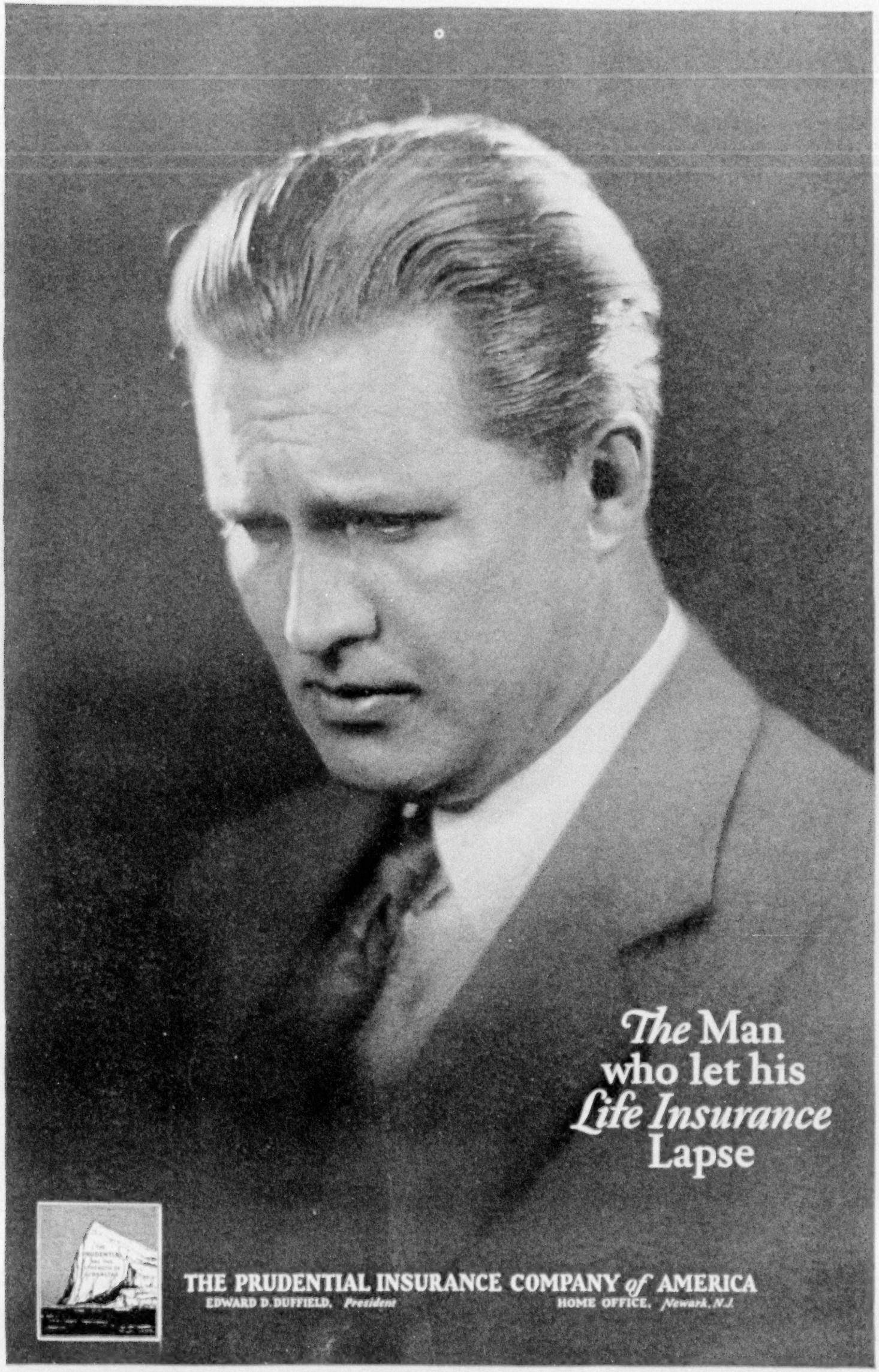
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You can buy Federal Land Bank Bonds directly from any Federal Land Bank or from the Fiscal Agent in denominations of $10,000, $5,000, $1,000, $500, $100 and $40. Coupon or registered form, interchangeable.

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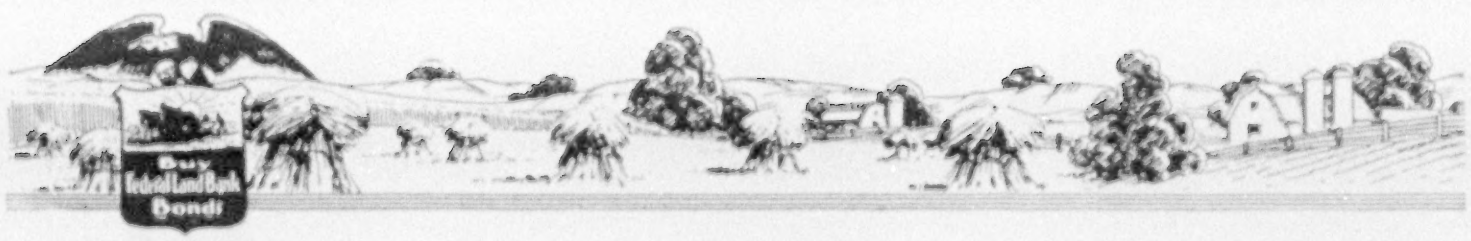

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Colgate's is the modern dentifrice. It cleans your teeth safely and thoroughly. It *removes causes* of tooth decay. Thus it helps prevent tooth trouble, protects your health and safeguards the attractiveness of your smile.

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